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Engaging the Public in Management: Voluntary Practice, Citizen Complaints, and Deliberating

Oil and Gas Risk

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Abstract

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Management of emerging technological risks is challenged by scientific uncertainty about relevant impacts and frequent gaps between expert and lay perceptions of risk. Engaging in deliberation can help to foster learning about interests, values and concerns among diverse stakeholders, resulting in policies that reflect not only scientific knowledge but stakeholder values and concern. Where policy arrangements are flexible, the benefits of deliberation may be most evident. My dissertation project demonstrates that engagement between firms, citizens, and governments can be used in managing emerging risks, but that government managers play an important role in structuring deliberation and ensuring firms respond to resident concerns. I evaluate oil and gas management policies in the State of Colorado as a case of using engagement and deliberation to manage emerging risks. It studies two engagement processes in detail. Specifically, I first study the voluntary adoption of engagement by individual operating firms as a management practice. I then study the filing of citizen complaints with the State oil and gas

regulatory agency as a citizen-led engagement mechanism. In the first chapter, I evaluate whether firm voluntarily adoption of engagement and deliberation strategies alters the odds of citizens filing complaints. Using a spatial case control model, I demonstrate that engagement and deliberation have the potential to mitigate the increased risks of complaints. At wellsites where companies adopt more restrictive practices, use of engagement and deliberation is associated with relative reductions in complaint behavior. Additionally, I find that larger companies are most likely to adopt engagement practices. In the second chapter I test firm motivations for adopting voluntary management practices including engagement. I explicitly focus on how firms might learn from complaints and choose to adapt practices. I make novel use of text similarity methods to evaluate firm level change in practices in relation to motivations and potential feedback sources. The results demonstrate that using information from complaints, fines, warnings, towards practice changes requires firms to be motivated to do so. Potential motivations identified as critical include coercive pressure from regulatory agencies and pressures from other firms. Relying on the first project for case selection, in the third chapter of the dissertation I evaluate the psychological and contextual foundations of complaint behavior. The paper is hypothesis generating, and suggest five hypotheses about how complaints are driven by contexts and perceptions of oil and gas development. Based on 17 semi-structured interviews with citizen complainants, I find that while complaints are behavioral response to observed threats, they are not necessarily a strong reflection of violations of official rules. Instead, citizens file may file complaints in order to convey perceptions and concerns to regulators and firms. This finding provides an indication that engagement may increase compliant behavior as engagement with firms can make evidence recorded via complaining useful within deliberations. In the conduct of

research, I found that complaints, themselves, fostered direct discussion between citizens and firms. The fourth chapter builds on Chapter Three to propose hypotheses about what enables complaining to foster deliberation and learning. I find that institutions play a critical role in motivating deliberation between residents and firms. However, science-based evidence may detract from the development of deliberation as it provides yes/no conclusions on regulatory standards. This suggests that government actors play a key role even in motivating voluntary engagement by structuring rules and motivations for industry outreach.

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Executive Summary: Engaging the Public in Management

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Unconventional gas development (UGD) policy is challenged by gaps between public perceptions of risk and current scientific evidence regarding risks. Principally, policies that only respond to current scientific evidence, while ignoring perceptions and concerns, may lead to citizen dissatisfaction (Small et al 2014). Adoption of deliberative processes is one potential avenue to improving management of oil and gas resources. Deliberation refers to “any formal or informal process for communication and for raising and collectively considering issues” (Stern and Fineberg 1996, 73). In this project, I study engagement and deliberation within two different but connected processes. Both processes are part of oil and gas management within the state of Colorado. First, firms can choose to adopt voluntary engagement practices via permitting at individual wellsites. Second, citizen complaints provide a method by which citizens can engage with government managers and operating firms over perceived threats. I study these two engagement mechanisms throughout the four chapters of the dissertation, studying engagement and deliberation as both a citizen response to threat and as a policy tool by which managers can involve citizens directly in planning and policymaking (Figure 1).

THEORETICAL BACKGROUND

Participatory practices are defined by who is invited to participate, the method of involvement, and the authority given to participants. Public managers can choose what kind of participation to use, and thus, adopt policies that vary in terms of the level of engagement and the ability of engagement to affect policy outcomes (Nabatchi, Ertinger, and Leighninger 2015).

Thin engagement, characterized by one-way or two-way information exchange, can provide knowledge or information from stakeholders to public managers. However, as the level of engagement deepens, deliberation or collective consideration of issues is expected to lead to collective learning. Collective learning refers to the processes and products created via learning when individuals work together or discuss issues collectively (Heikkila and Gerlak 2013). Deliberation can foster the products of new knowledge discovery, building of shared definitions, and the making of joint decisions as learning occurs (Emerson and Nabatchi 2015a). Critically, engaging the public in decision making promises both substantive and instrumental benefits. Learning from engagement and deliberation can have substantive benefits of helping managers to create better policies and of conveying scientific interpretations to the public. Second, involving the public has instrumental benefits— it can create trust, legitimacy, and shared understandings about governance systems. I focus on Colorado oil and gas management as a case of using deliberation in public policy.

In Colorado, firms adopt a wide range of voluntarily engagement practices that range from notifying residents about potential development to creating avenues for deliberation over interests, values, and concerns. These actions are a type of management-based regulation, where managers give firms flexibility in choosing management tools (Coglianese and Lazer 2003). I use the term “Voluntary Management Practices” (VMPs) to refer to use of management-based regulatory practices that lack a formal coercive element. Voluntary programs such as VMPs are politically expedient and bring a potential benefit of flexibility (Lyon and Maxwell 2007). Given diffuse environmental impacts and monitoring challenges, by allowing firm choice of practice, VMPs can leverage firm knowledge and expertise to produce policies that better reflect

on-the-ground policy needs (Harrison 1998; Coglianese and Lazer 2003; D'Arcy and Frost 2001). Such voluntary tools have a limited track record of success (Coglianese and Nash 2016). Part of this may be that voluntary programs assume firms are motivated to both adopt and adapt practices through learning (Khanna et al. 2007). Potential motivations that may structure decisions include competition, normative pressure, coercive pressure, and uncertainty (Delmas and Toffel 2004). When firms are engaged with the public, collective learning combined with one of the above institutional motivations should theoretically lead to the adoption of new practices that reflect public concerns. Complaints are one way firms and the public can engage in promoting learning; complaints from citizens also provide a metric for assessing whether engagement processes that firms adopt improve citizen-assessed outcomes of drilling.

The Colorado citizen complaint program is designed as a form of thin participation whereby concerned citizens complain to the regulatory agency, which then investigates in person or via monitoring action (such as a noise study), and provides feedback to the resident and alerts the oil and gas firm to the complaint. Complaint systems such as this are relatively common in environmental fields. As a one- or two-way participatory process, complaints can potentially improve monitoring capabilities (Goeschl and Jürgens 2012/3), though there are challenges in that complaints may be a poor reflection of environmental violations (Warwick and Ortolano 2007). However, even if complaints are weak evidence of environmental harms, the complaint system creates a potential avenue for learning what practices work to address citizen concerns. Here, the choice of citizens to complain becomes a critical element for study.

The choice of citizens to complain can be studied as a kind of protective action, where citizens contact the State as a response to a threat. The Protective Action Decision Model

(PADM) provides a potentially useful frame for characterizing the choice to complain as a response to environmental and social context, core perceptions, and a process of search and decision making (Lindell et al. 2016). I stretch the framework by applying it to a man-made hazard of industrial activity rather than a natural hazard. Complaints are a behavioral action engaging government over impacts— the decision to complain thus can create either thin one-way engagement. However, firms can respond to complaints with deliberations, and potentially building of shared definitions, discovery of new knowledge, and production of new decisions (Figure 2).

The engagement practices characterized here, first the voluntary management practices which firms can adopt, and then citizens ability to complain as provided by the State oil and gas agency, create a system whereby two different engagement practices both can interact, with engagement by and of residents and firms both shaping how oil and gas is managed in Colorado. It thus creates unique case for understanding the promises and potential pitfalls of engagement and deliberation for managing emerging technology risks such as unconventional gas development.

EMPIRICAL CHAPTERS

The first paper tests if firms' voluntary adoption of engagement and deliberation as VMPs is associated with changes in the likelihood of a citizen filing a complaint about a given wellsite. Moreover, it tests the hypothesis that the instrumental benefits of engaging will be greater than the substantive benefits of engaging; this test is enabled by separating complaints into those that lead to no violations of state rules and statutes (non violation complaints) and those with a physically observable violation (violation complaints).

I use a spatially matched case-control design to assess how adoption of engagement and then deliberation as firm practice is associated with differing odds of observing citizen complaints, which were collected from the Colorado Oil and Gas Conservation Commission. Complaints were divided into violation and non violation categories to distinguish between how engagement might affect perceptions and empirical measures of threat differently. Using supervised machine learning, I codify oil and gas drilling permits based on whether firms adopted engagement and/or deliberative management practices at wellsites (Figure 3). I model complaints as a product of practices using Bayesian approximation of a clustered binomial likelihood model, in order to include well-specific controls, company random effects, and spatio-temporal dependencies.

While firms tend to adopt more VMPs in areas where complaints are more likely, where deliberation was used, this effect decreased (Figure 4). This is despite the fact that neither the adoption or engagement or deliberation is significantly associated with a change in complaint odds when assessed alone. Because VMPs are more likely to be adopted in urban areas or at sites where firms face some sort of concern about management, this finding suggests there deliberation may reduce complaints relative to other VMPs. This finding persists after controlling for density of residence and specific land use rules that may influence management practice adoption. In terms of characterizing instrumental versus substantive benefits of engagement, co-occurrence of violations and firms adopting deliberation were exceedingly rare. Part of the reason is that large, resourced firms are the most likely to adopt deliberative practices (Figure 5). These firms also experience fewer violations overall; in other words, large firms at low risk of violating state rules and statutes appear most likely to adopt deliberative practices.

In Chapter 2, I evaluate motivations for firm VMP adoption. I also assess the potential for firms to leverage feedback sources, such as complaints, in choosing what practices to adopt. My hypothesis is that that normative pressure, coercive pressure, competitive pressure, and uncertainty each enhance the translation of public complaints and other feedback sources into adoption of new-to-the-firm practices.

Utilizing a census of drilling permits submitted between 2009 and 2015, I quantify change in VMPs by measuring textual similarity between VMP text adopted in each period. I model change in text between two periods as the dependent variable of a logistic regression model, controlling for spatial proximity of wells, company-level characteristics, and lagged time-variant characteristics. Each of competitive pressures, uncertainty, coercive pressures, and normative pressures are also measured via textual similarity metrics (Table 1).

I find that institutional motivations for adoption are complex. Given multiple measures that capture different elements of institutional pressures, there can be differential impacts that make simple univariate conclusions seem overly simplistic (Figure 6). Specifically, I find that firms that are most unlike other firms in terms of practices are most likely to change practices. While this may at the surface indicate firms are trying to become more-alike to other firms, firms who are part of trade organizations are also least likely to change. Thus, for firms closest to the field-specific norms, change in practices is most unlikely. Coercive pressure on the other hand is associated with increased odds of change when measured as the count of mandates placed on a permit, but decreased odds of change when measured as voluntary takeover of previously mandated practices. Hence, general coercive pressures from regulators are associated with increased adoption of new practice via learning, but pre-emption of the threat of future regulation

is associated with lower rates of change as firms revert to practices they have used previously.

An assumption here is that learning is most frequent in regards to new practice, and future research should evaluate how often learning leads to adopting new practices from other firms or new evidence sources (the concept of learning modeled here) versus adopting existing practices that are proven to work. Of information sources tested, none of complaints, fines, or warnings were associated with adoption of new-to-the firm practices, while passing inspections was associated with an increased odds of adopting new practices. This is a finding that should be explored more as complaints, fines, and warnings are each a form of negative feedback, whereas passed inspections might potentially provide positive encouragement towards further innovation.

In Chapter 3, I utilize the Protective Action Decision Model (PADM) to generate new hypotheses about the connection between institutional and environmental contexts, citizen perceptions of risk, citizen awareness and recognition of risk, and the decision to engage the state oil and gas agency by complaining. Chapter 3 is hypothesis generating and leverages quantitative models for qualitative case selection (Weller and Barnes 2014). Relying on the quantitative model developed in Chapter 1, I recruited 17 complainants (26% response rate) from the state of Colorado for semi-structured interviews about the process of filing complaints, their perceptions and experiences of oil and gas development, and their interactions with stakeholders, including firms, neighbors, advocacy organizations, and state and local government. The interviewed individuals were recruited via paired selection to maximize potential variation within the sample. The interviews were recorded and transcribed using a first-stage machine transcription, which was then corrected by a human transcriber, and analyzed in the computer-assisted qualitative coding program Dedoose (Lieber and Weisner 2013). Additionally,

documents describing wellsites, relevant regulations, local government actions, permits, and newspaper reports were gathered and saved as part of the dataset.

The interviews were coded first by using the variables defined within PADM (Figure 6). This included coding statements and evidence about Environmental and Social Context. Elements coded included sense of place, place history, connections to stakeholders, and individual identity characteristics. This also included coding institutional contexts such as local government involvement or powers of local actors to motivate firm actions, as well as firm actions, such as adoption of engagement and deliberation via VMP. Second, core perceptions—including perceptions of oil and gas development, perceptions of stakeholders, and perceptions of alternative actions—were tagged within each interview transcript. Psychological factors coded as involved in the perception of risk included proximity, intrusiveness, probability, severity and dread. Pre-decisional processes, such as when individuals identified hazards or assessed risk, were coded as well, including whether they assessed a risk to health, property, or their community. Moreover, the decision to complain, as well as citizens' methods of identifying complaining as a viable risk management option, were coded as decision processes.

In terms of emerging hypotheses, I find that even where long term impacts are not perceived, the intrusiveness of an event on daily life may be enough to motivate protective action. Moreover, complaints occur after environmental exposures, not as exposure-less activism. Residents perceive specific exposure events of oil and gas development locally as personally harmful rather than collectively harmful, even if they see oil and gas development as an overall detriment to their communities. While engagement may change the nature and function of complaints from individual engagement to a collective demonstration of impact.

Thus the presence of engagement policies may not reduce complaint behavior but may instead potentially lead to more complaints by giving unaddressed complaint purpose.

The final chapter relies on the basic coding and sample selection for Chapter 3, but extends the analysis to evaluate how complaints themselves can foster thick engagement characterized by the presence of the collective learning processes of deliberation, definition, discovery, and determinations (Emerson and Nabatchi 2015b). This chapter serves as the final chapter and ties the choice of firms to engage voluntarily in planning via VMPs, to firm motivations for engagement, and to the translation of complaining from a thin or two-way participation mechanism to one that can foster collective learning via principled engagement of complainants, firms, and regulators. Chapter 4 suggests what factors foster thick, principled engagement in the addressing of citizen complaints. This is a critical question because principled engagement makes learning from complaints and thus achieving instrumental and substantive benefits for managers most likely. This chapter's coding began by studying those excerpts from interviews where interviewees described a network connection to another stakeholder involved in oil and gas management. For each connection, I coded whether there was evidence of principled engagement or meaningful conversations about issues between actors with different interests and roles in management. For each case of principled engagement between residents, firms and or governments, the presence of deliberations, definition, discovery, and determinations were coded such that increased counts of each process processes measures thicker, more principled engagement. By evaluating these codings in light of the choice of citizens to complain, environmental, social, and institutional contexts the paper provides hypotheses about what makes thick engagement most likely to occur. Five hypotheses emerge.

First, agreements and procedural arrangements that give citizens or governments legal standing in planning and procedures are more effective at promoting thick, principled engagement because they can provide a coercive incentive for engaging with citizens (Figure 8). Second, even complaints exhibiting thick participation do not initiate contact between the firm and citizens; rather, they initiate contact between citizens and government. Third, as a result of this, complaints bring government into engagement as a third party between firms and residents. Fourth, discovery and shared definitions are unlikely to emerge when engagement is coerced or mandated via institutions, yet firms lack a strong internal motivation to principally engage. Finally, where the legality of firm actions are supported by scientific study, even though impacts remain unacceptable to residents, future complaint behavior is less likely.

CONCLUSIONS

In summary, the chapters demonstrate some of the benefits of learning from complaints and from citizens that are currently achieved in Colorado, and that firms could likely improve their ability to learn by further engaging with the public. The finding in Chapter 1 that voluntary engagement and deliberation do not decrease complaints, except when other VMPs are adopted, could potentially stem from the fact that engaged citizens are more likely know about the possibility of complaining, and thus engagement may lead to an increased likelihood of complaints. This hypotheses emerged in Chapter 3, and reflects one of the difficulties of managing social elements of risk: where engagement does develop, if residents find complaining effective, they may actually complain more. This is potentially beneficial, as engagement in government has a normative purpose and informed governance is likely better, but it also challenges the perception that complaints are an indicator of harm. It follows that the frequency

of complaints also reflects the perceived efficacy of engaging government and firms regarding the impacts of oil and gas development.

Still, where engagement is adopted, we would hope that those complaints without observable physical violations would still significantly decrease as citizens come to understand what impacts of drilling the state can address by motivating firms to take action. Essentially, reductions in complaints should still capture increased satisfaction with governance processes, even if some levels of successful engagement lead to a marginal increase in complaints, so long as citizens are not exiting the complaint process due to perceived ineffectiveness.

Engagement and deliberation are most commonly adopted where coercion is strongest. This calls into question the usefulness of purely voluntary programs since voluntary policies here were most commonly adopted where there was some element of coercion present. One finding for policymakers here is that local governments may be able to pressure firms to voluntarily engage by leveraging future benefits or by working with residents to help them enter deliberative actions with firms. These coercive pressures, when they exist outside of the state regulatory program, can have a real impact on policies. The fact that coercive pressure is associated with learning indicates that coercion potentially goes far beyond simply getting firms to act, but can help firms to develop new actions.

While engagement and deliberation hold some promise for improving policy outcomes, their promise still rests on the governmental institutions that surround them. Government actors play a key role in coercing firm action and ensuring effective methods of deliberation develop. Voluntary governance and governance in general should not be seen as removing government from the picture but instead, even where other actors are involved in governance or traditional

powers of governments are delegated to firms, government managers and regulators continue to play a key role in structuring incentives and encouraging deliberation.

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Figure 2: Each of the four subprocesses of principled engagement with an example coded from the interviews conducted.

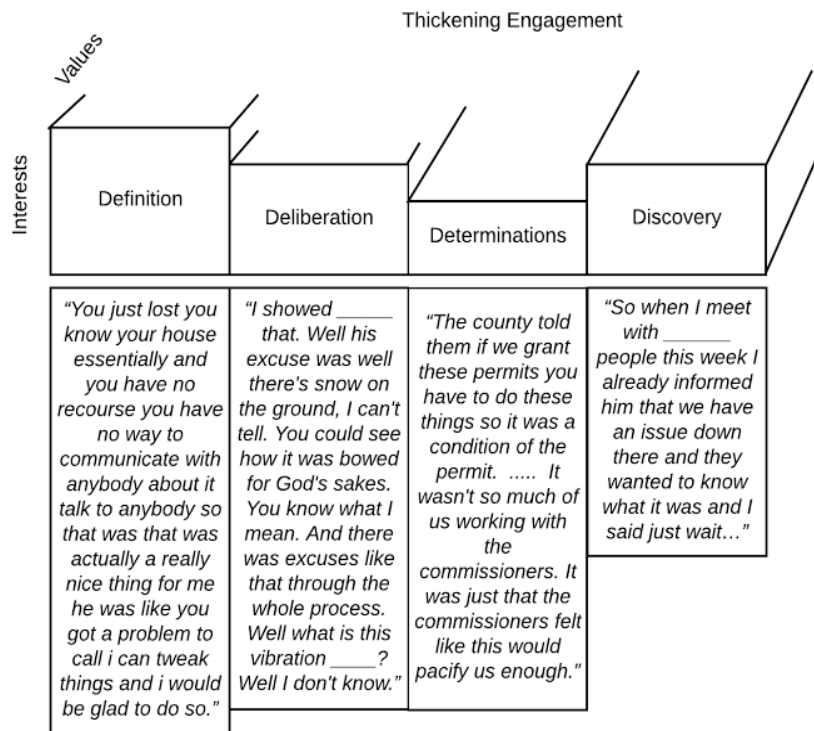


Figure 3: A diagram of the supervised machine learning process. The algorithm used a training set to train a model for use on the full set of COGCC permits.

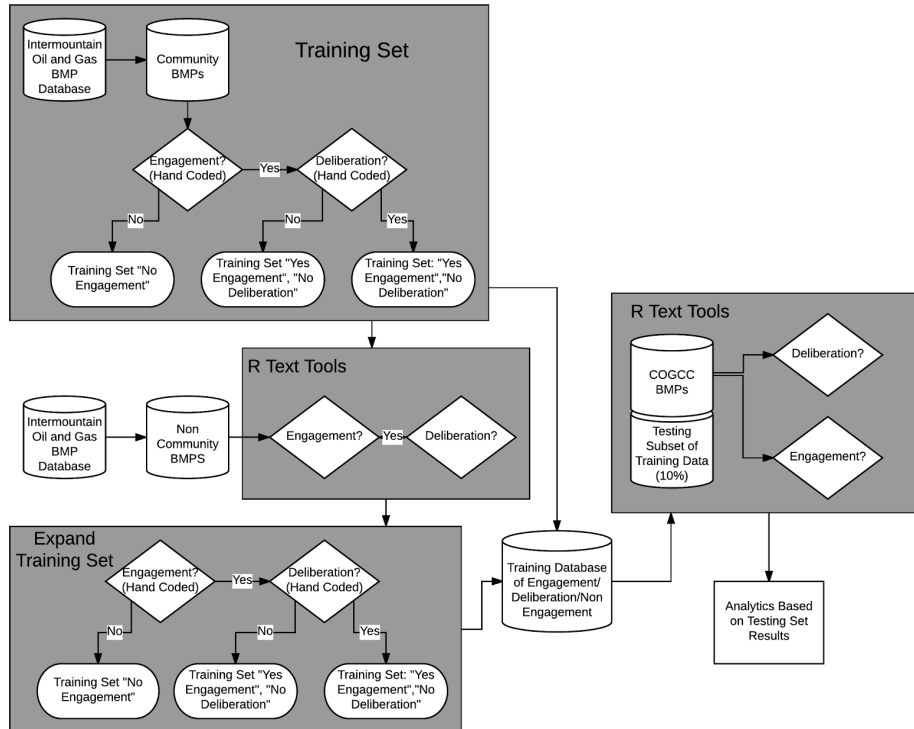


Figure 4: Main results from chapter 1. Engagement+Deliberation were only associated with changes in complaints through the count of VMPs, associated with a significant decrease in the odds of complaints as as the count of VMPs increased relative to an increase in VMPs without engagement.

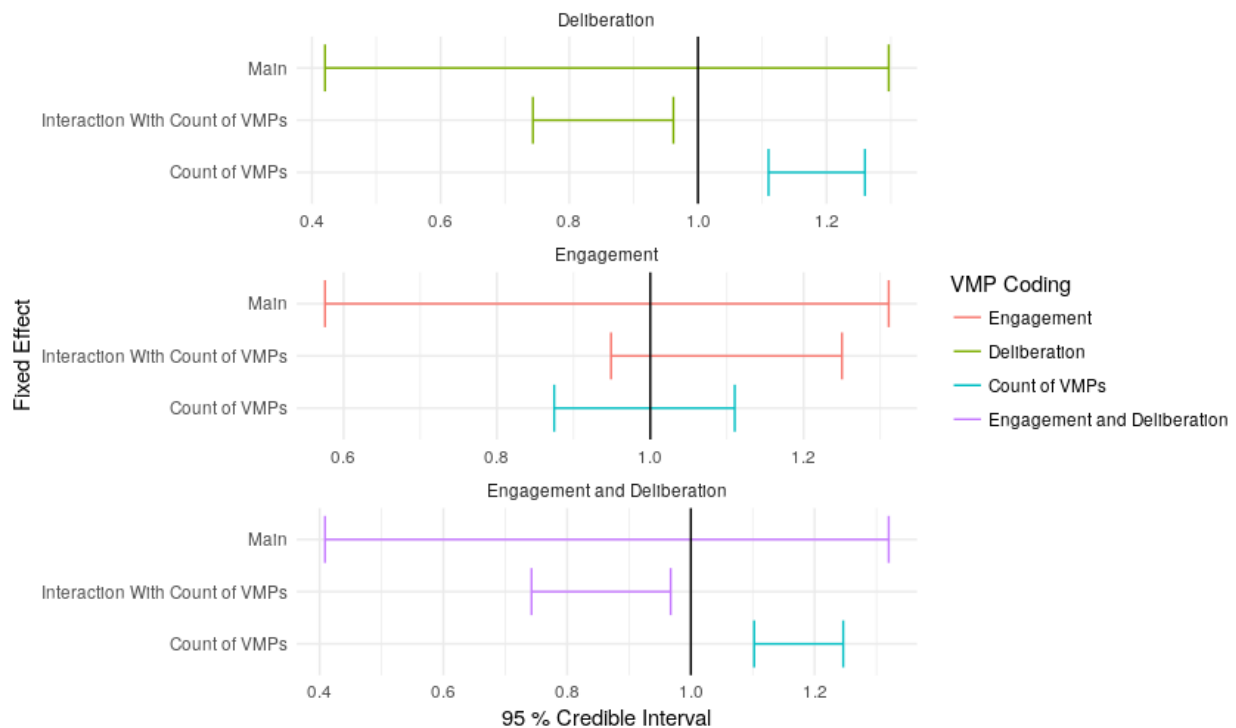


Figure 5 As company size increases (measured via well counts), companies have generally lower odds of being complained about.

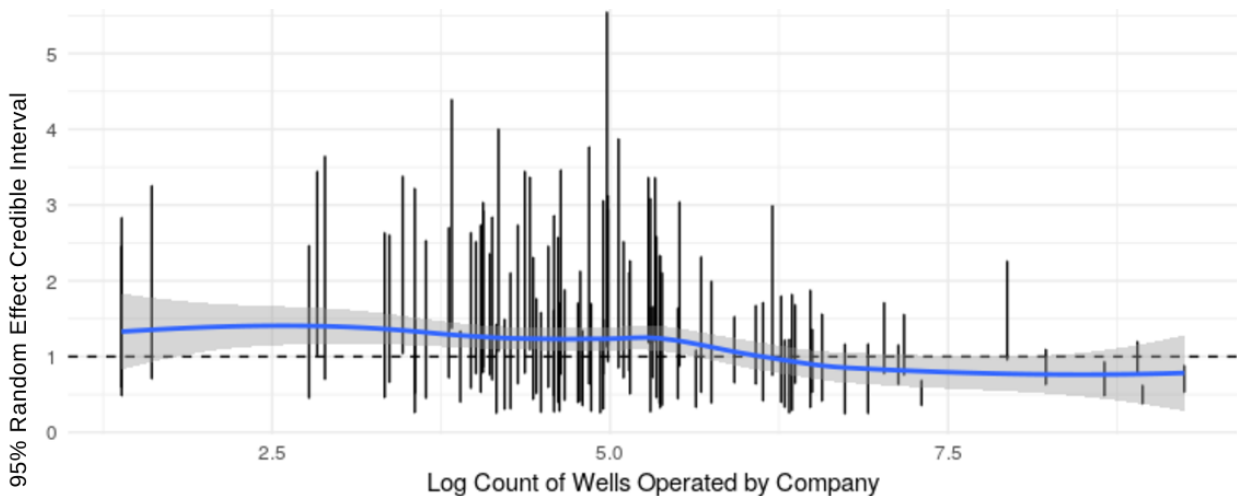


Figure 6: Results from Chapter 2 showing 95% credible intervals. Each bar shows sensitivity of trials to assumptions about text similarity. Coercive pressure (panel 1), is associated with decreased change but also increased change measured via general coercion. Being like other firms is associated with decreased change (all three results in panel 2).

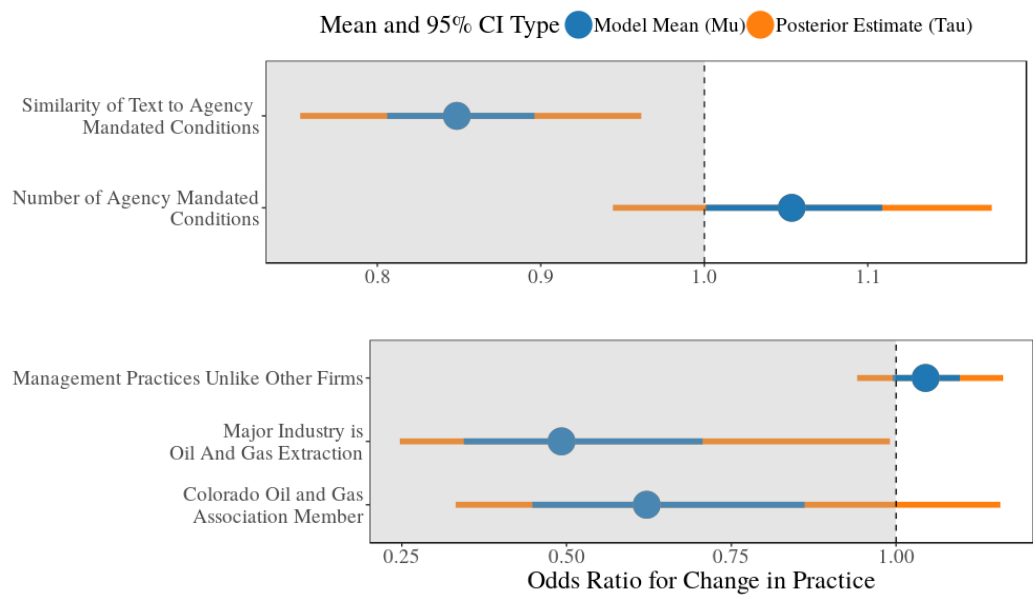


Figure 7: The Protective Action Decision Model as applied to oil and gas complaint decisions.

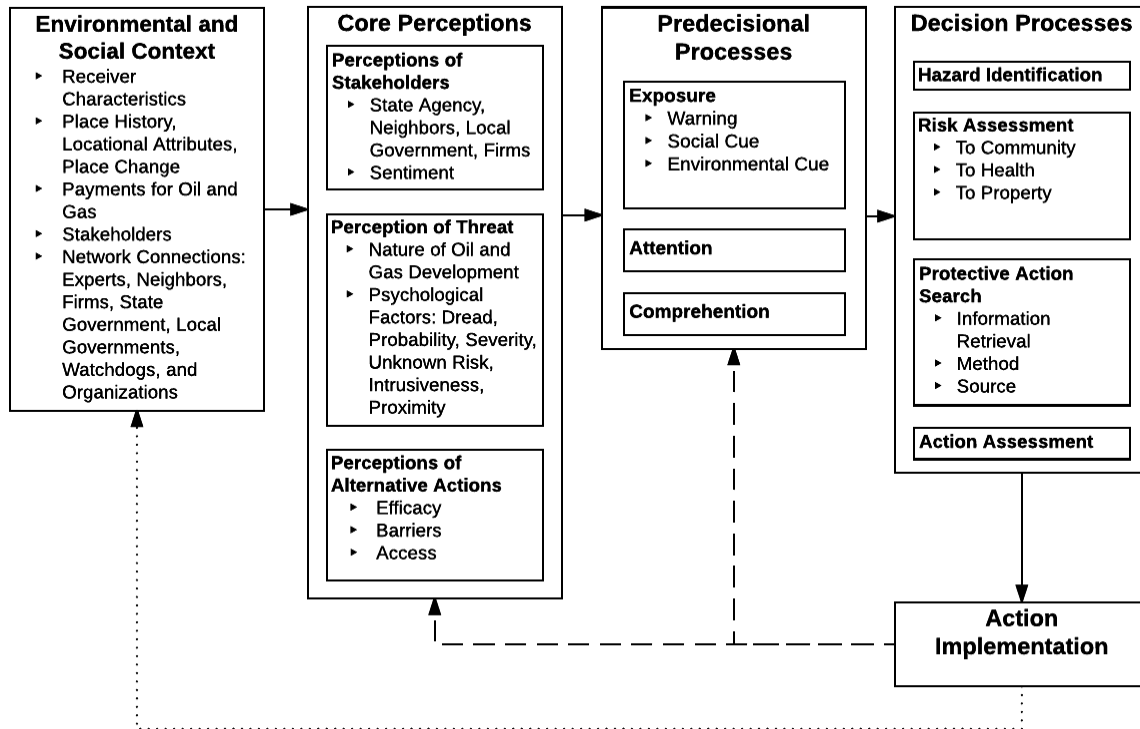


Figure 8: Counts of principled engagement codes. Increases imodel “thickening” engagement.

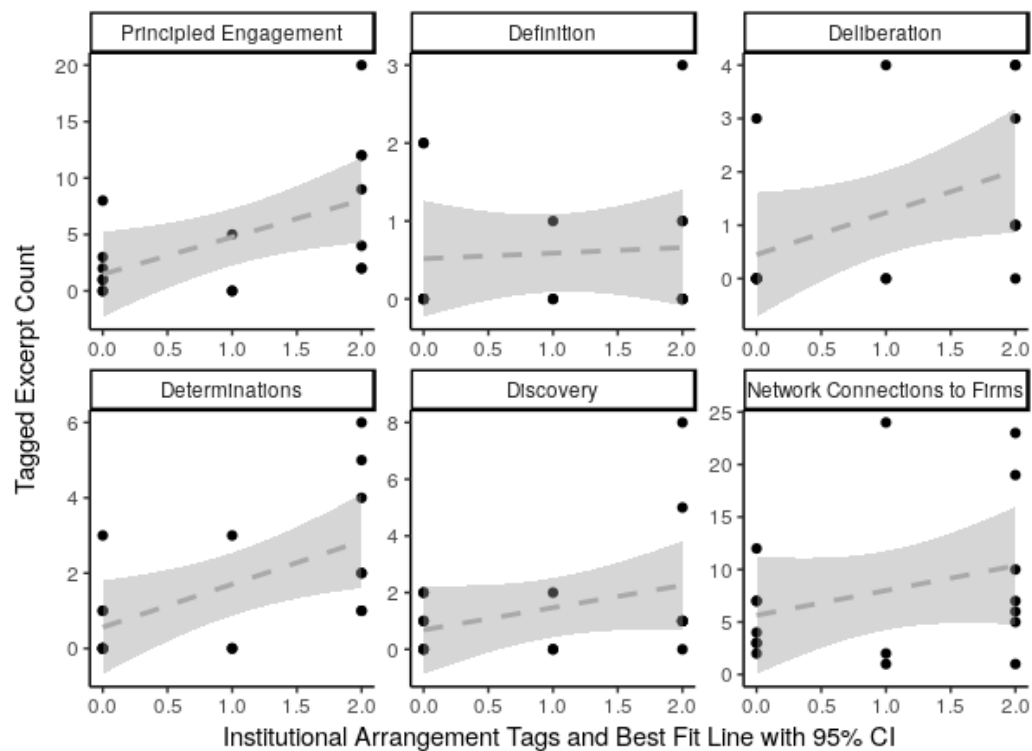


Table 1: Measurement of firm motivations for Chapter 2

Motivations	Indicator
<i>Economic Pressure</i>	Oil and gas produced at well site over 5 year Period from permit date based on COGCC records (locations often have been previously drilled)
<i>Coercive Pressure</i>	- Comparison to agency conditions of approval - Count of COA characters specific to new permit
<i>Normative Pressure</i>	- Membership in Oil and Gas Trade Groups (API, COGA) - Membership in Oil and Gas Extraction Subfield (Via NAICS Code) - Dissimilarity of firm VMPs (Globally) and other firm VMPs (Globally).
<i>Firm Uncertainty (motivating search)</i>	- Mimicry— Cosine similarity of newly adopted VMPs to other firms VMPs (locally) - Percent of Wells Drilled in the same oil and gas field in the previous year - Wildcat Well (exploratory wells in unproven fields)

Introduction: Rationalizing Public Engagement in Risk Management

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PUBLIC POLICY AT THE KITCHEN TABLE

A kitchen table in Battlement Mesa, Colorado, population less than 5000, is not the place I expected to be engaging with citizens over how to manage emerging technology risks. In October of 2016, I found myself at a couple's table— one was off digging through papers looking for a document on how he filed his complaint about dust and odors in their community, the other was cutting vegetables while relaying how oil and gas development continually impacts their lives. They talked with pride about their community group's efforts to promote change in management practices by filing complaints and attending meetings, but, the perception was that the changes were primarily small. They felt policies meant to manage environmental and health risks were always playing catch up. "It's just a frustration," she said, "you know the thing is people aren't bad, public policy... it's a little bit slow." Yet for many of the people I talked with, the impacts of oil and gas extraction were much more than a frustration. Thirty miles west of Battlement Mesa as we sat in his living room, a man whose family was moving after 30 years told me, "I would have been content to stay here the rest of my days. We got to go somewhere where there aren't any gas wells." He had filed upwards of 10 complaints about odors and, while regulators and firms both recognized his complaints as legitimate, they struggled to identify the cause.

What do these experiences tell us about the impacts of oil and gas development? How can we use public deliberation between citizens, firms, and governments to reduce the impacts of oil and gas development? And how can firms be motivated to adopt such practices even without formal regulations? While I evaluate these questions in relationship to oil and gas development in the state of Colorado, each question transcends oil and gas development and speaks to a larger issue of how to effectively manage emerging technology risks.

EMERGING TECHNOLOGIES: THE ROOTS OF THE PROBLEM

Fossil fuel extractive industries remain a critical part of US economic production and play a vital role in nearly all future US energy projections. Natural gas production from shale gas and tight gas are expected to increase by 31% through 2040 (EIA 2017a). Meanwhile, tight oil production is expected to amount to over half of crude production in the US through 2040, and the Energy Information Administration estimates natural gas will represent a larger portion of US electricity production than renewables—growing at a similar rate also through 2040 (EIA 2017b).

This steady growth in natural gas as a part of the US energy portfolio began in the 1990s when new extraction techniques meant expansion of recoverable reserves both domestically and internationally. Though high volume hydraulic fracturing has received much of the media and public attention as the key enabling technology, horizontal drilling techniques made possible by new rotational drill heads were the key enabling technology for unconventional gas development (Kerr 2010). While developing shale gas had previously been economically intractable, the new techniques brought gas extraction to regions where it had never previously occurred and

intensified development in other regions. In Colorado, which has a history of conventional extraction and also had some failed shale gas development projects in the 1970s and 1980s, unconventional gas development brought expansion of drilling in near-suburban areas north of Denver and rural areas in the west and southeastern parts of the state. While Colorado's oil and gas development has received less media attention than those occurring in Pennsylvania and New York, drilling in Colorado brought with it intense public debate, lawsuits, protests, and referendums on what kinds of development should be allowable, how close development could be to communities, and what kinds of practices firms should adopt to mitigate impacts of development (Neese 2005; Weible and Heikkila 2016; Davis 2012).

Challenges to managing UGD development include lack of scientific consensus about the impact of nearby development of oil and gas resources on air and water, which compounds alternative viewpoints from active citizens groups and operating firms about what the relevant impacts of oil and gas should be (Office of Indian Energy and Economic Development 2017; Adgate, Goldstein, and McKenzie 2014; Small, Güvenç, and DeKay 2014). Meanwhile, for states and local governments, oil development brings with it potential economic and population growth, bringing new development and an increased tax base (Gerking et al. 2003; Allcott and Keniston 2014). This in turn increases stress on local infrastructure, community resources, and identities of place (Munasib and Rickman 2015; Perry 2013; Jacquet 2014).

The conflicts created by UGD are not unique, but are reflective of the social disruption, environmental, and health concerns that can accompany emerging technologies (Lynn Frewer 1999; Pidgeon, Harthorn, and Satterfield 2011; Todt and Luján 2014). While early risk management responses made efforts to separate management and assessment of risks so as to

ensure sound science and evidence based policies, newer frameworks for addressing emerging risks stress consideration of social concerns and perceptions of risk alongside economic tradeoffs and scientific evidence throughout the assessment and policymaking processes (Omenn 2003; National Research Council et al. 1996; National Research Council 1984, 2009; Rosa, McCright, and Renn 2013). Deliberation is “any formal or informal process for communication and for raising and collectively considering issues” (Stern and Fineberg 1996, 73). One of these new approaches, the Risk Governance Framework’s (RGF) is based on the concept that use of deliberation in decision-making is an especially useful tool for improving risk management (Renn 2008; Rosa, McCright, and Renn 2013).

This project began as a method of testing the RGF’s proposition that deliberation would improve risk management policies in the empirical case of oil and gas development. However, the project now connects three bodies of theory to provide definitional and conceptual clarity for RGF’s proposed use of deliberation. This expansion is useful because it helps to provide a social-scientific explanation for the management provisions set by RGF that is based on a larger literature from public policy and management. While the RGF is based on social scientific theories, it is itself a prescriptive framework that describes a potential pathway towards improving risk management (Rosa, McCright, and Renn 2013). As such, to contribute usefully to the concepts of risk governance, one must consider frameworks and theories that provide causal hypotheses about how engaging the public in deliberative processes could improve risk management outcomes (Sabatier 1999).

PUBLIC ENGAGEMENT AND LOCAL PRACTICE ADOPTION

Varieties of engagement can be characterized by considering who participates, how participation occurs, and the powers granted to participants (Fung 2006). Whereas public participation tends to refer to public notice and comment procedures, public engagement is an umbrella term that refers to involving the public in policymaking and management (Bingham, Nabatchi, and O’Leary 2005; Nabatchi and Amsler 2014). Here I define engagement as the act of inviting and assembling of individuals for management or planning. Deliberation, definitionally, requires going beyond mere involvement to meaningful consideration of diverse knowledge, values, interests and concerns in the governing process (Bingham, Nabatchi, and O’Leary 2005; Rosa, McCright, and Renn 2013; Nabatchi and Amsler 2014). Whereas engagement makes no requirement that those involved be given power or influence in the decision making process (Nabatchi, Ertinger, and Leighninger 2015), “meaningful consideration” makes the potential for policy change as a result of engagement a necessary condition for “deliberation” to have occurred (Nabatchi and Amsler 2014).

By this definition, deliberation is a mode of engagement. Specifically, it is a mode of engagement whereby methods of management and decision are potentially shaped by engaging a wider group of stakeholders in decision making, risk assessment, and management processes. While deliberation makes explicit that some power or influence must be given to actors who are engaged, the term deliberation does not carry a requirement about who is invited to engage or for how the conversations should proceed. This allows deliberation to serve purpose in diverse

public policy applications where the rationales for using deliberation, which I describe next, make it justifiable.

Policy Rationales for Deliberation

The rationales for using deliberation as a risk management procedure are based in collaborative learning theory (Daniels and Walker 1996; Heikkila and Gerlak 2013). Learning that occurs as individuals engage is termed collaborative or collective learning (Daniels and Walker 2001; Heikkila and Gerlak 2013):

“1) a collective process, which may include acquiring information through diverse actions (e.g. trial and error), assessing or translating information, and disseminating knowledge or opportunities across individuals in a collective, and 2) collective products that emerge from the process, such as new shared ideas, strategies, rules, or policies” (Heikkila and Gerlak 2013).¹

Deliberation itself, as a mode of engagement, promotes translation, dissemination, or discovery of knowledge (Heikkila and Gerlak 2013). As actors meaningfully and honestly engage and deliberate about how to address risks, they learn about the issues and values of other stakeholders (Heikkila and Gerlak 2013; Emerson and Nabatchi 2015b). Deliberation can lead to more robust policies over time as firms improve practice or select practices that have the largest possibility of remedying public concerns (Renn 2008; Emerson and Nabatchi 2015b). Further, deliberation, may also improve policy outcomes or the effects of a policy that exist beyond the program such as trust, legitimacy, or environmental quality (Perrin 2006; Koontz and Thomas 2012). Unlike forms engagement that do not require meaningful consideration, deliberations form a key part of

¹ I use the terms collaborative and collective learning interchangeably as both build off of the collaborative learning model proposed by Daniel and Walker 2001, though Heikkila and Gerlak’s definition provides a conceptually clear and parsimonious definition of what collaborative or collective learning entails.

collective learning processes, because they emphasize conversations over potential solutions and not merely the sharing of knowledge or concern without a response.

Deliberations can occur at multiple scales but they have recently been included as a process that occurs via principled engagement in collaborative governance. These terms, too, require definition. Collaborative governance is:

“The processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished” (*Emerson, Nabatchi, and Balogh 2012*).²

This definition of collaborative governance forms the basis of Emerson et al.’s *collaborative governance regimes framework (CGRF)* (*Emerson, Nabatchi, and Balogh 2012*). It intentionally broadens the term collaborative governance to include a wide range of potential structures. Within CGRF, principled engagement refers to “meaningful and honest conversations about interests, values and concerns”. Deliberations occur as a sub-process of principled engagement, and deliberations help to achieve learning outputs of the collaborative which include determinations, shared definitions, and new knowledge discovery. Thus, while the RGF recognizes deliberation as a method of improving risk management, CGRF recognizes deliberation as key element fostering collaborative learning outputs. These frameworks, though developed by separate scholarly communities, provide a prescriptive framework for using deliberation (RGF), and a rationale for its use (CGRF).

² Based on the above definitions, collaborative governance requires use of engagement to accomplish a public purpose, while deliberation requires going beyond mere feedback and commenting to collective consideration of how to construct policies and responses that recognize the interests and values diverse stakeholders (Fung 2006; Bingham, Nabatchi, and O’Leary 2005; Emerson and Nabatchi 2015b). These concepts are nested, but deliberation does not require the structures of collaborative governance and collaborative governance may be used without deliberations occurring, though the effectiveness of collaborative governance would likely be limited (Ulibarri 2015).

One of the difficulties in operationalizing deliberation as a concept is that there is not necessarily a firm boundary-point at which deliberation occurs or does not occur beyond the rather vague terminology of “meaningful” or “collective”... “consideration”. However, as the level of deliberation increases, the theoretical expectation is actors increasingly discover the issues and values of other actors involved in discussions. They also can build shared understandings and define common language, and eventually they can create make decisions or create outputs which are termed determinations. These four processes of deliberation, discovery, definitions, and determinations, constitute learning processes and their joint presence presence is synonymous with principled engagement between actors (Emerson and Nabatchi 2015b). A greater degree of principled engagement is termed thickening of participation (Nabatchi, Ertinger, and Leighninger 2015). Thus, as the principled nature of engagement increases, engagement can move from thin processes defined by one or way information sharing to thick processes where collective learning can occur. This thickening occurs first through deliberation and then through learning processes and outcomes including discovery, definitions, and determinations.

Emerson and Nabatchi efforts to define the role of deliberation in the CGRF primarily focus on use of deliberation within collaborative governance regimes (CGR), which are defined as a “particular mode of, or system for, public decision making in which cross-boundary collaboration represents the prevailing pattern of behavior and activity” (Emerson and Nabatchi 2015b, 18). Previous work on engagement in Colorado has largely focused on deliberation as it occurs within CGRs. According to Emerson and Nabatchi’s framework, CGRs last a year or more and involve more than two actors, and they only exist where collaboration is the prevailing

manner of interaction (Emerson and Nabatchi 2015b). An example from Colorado of a CGR is the Governor's Blue Ribbon Task Force on Oil and Gas Development (Heikkila et al. 2014). This formal CGR and its processes and products have been studied by many scholars in Colorado, but it forms only part of the larger process of ongoing engagement between firms, public, and citizens about how to manage oil and gas risks. However, deliberation, as discussed earlier, is not limited to CGRs, but it can occur as a mode of many types of engagement. Engagement and deliberation as processes of collaborative governance, can occur without the formal or informal structures typically studied as "collaboration" or "collaboratives" (Emerson and Nabatchi 2015b; Bryson, Crosby, and Stone 2006; Emerson and Nabatchi 2015a).

Coming back to the case of Colorado, one of the recommendations of the Governor's Task Force was increased use of consultation and engagement locally, potentially creating numerous less-formal deliberative relationships between oil and gas firms and local stakeholders (Heikkila et al. 2014; Heikkila, Weible, and Olofsson 2017; Weible and Heikkila 2016). This was not a completely new idea in Colorado. Since at least 2009, firms had been voluntarily engaging residents at individual well sites via the permitting process. Here, it is important to step back from deliberation and engagement, and consider the decentralized nature of oil and gas management.

Firm Voluntary Practice and Oil and Gas Regulation

Regulation of oil and gas is overseen by the State, but local permitting allows flexibility and enables firms to employ specific practices that fit the development needs at individual locations (Steve Souders 2005; Getches-Wilkinson Center 2013). While firms operate within a

state-level regulatory framework that defines structural guidelines, (Rusk, Martin, and Telford 2008), planning process rules (Brady and Crannell 2012), and required mitigations (Milt, Gagnolet, and Armsworth 2016), individual firms can choose to vary practices so long as they meet baseline requirements.

When a firm adopts a practice that is intended to reduce oil and gas impacts that they are not formally required to adopt as part of the official state regulatory system, the practice can be recorded on location and well-permitting documents as a “Best Management Practice” (BMP). When firms agree to these BMPs, the state of Colorado is then allowed to regulate the site based on practices the firm has agreed to adopt. However, the adoption of these practices is voluntary on the part of firms, and firms can choose to adopt practices that fit location specific needs, local citizen concerns, or even practices that are meant to convince regulators they are good operators in an area (Colorado Oil And Gas Conservation Commission 2008).

Coercion is “the extent to which a rule restricts individual or group behavior as opposed to merely encouraging or discouraging it” (Salamon 2002, 25). Because adoption of BMPs is not formally coerced, or the choice of practice is termed “voluntary” (Lyon and Maxwell 2007). The voluntary label stems from the fact that firms themselves make the choice to agree to abide by such practices. In doing so they are regulated on a stricter set of rules than the general statewide oil and gas framework.

Though within Colorado these practices are officially adopted via the term “Best Management Practice”. I classify and study them as voluntary management practices, and use the term “Voluntary Management Practices” or VMP (González-Benito 2008; Delmas and Toffel 2004; Khanna et al. 2007). Other scholars including Coglianese and Lazer have termed these a

type of management-based regulation, or a regulatory strategy that requires individual firms to use their private planning strategies to design the very regulatory framework they operate under (Coglianese and Lazer 2003). This flexibility in firm choice is by design. By allowing choice, VMPs leverage firm knowledge in creating a regulatory system that is not prescriptive in its implementation but is adaptable to local needs and concerns (Coglianese and Lazer 2003; Baumgart-Getz, Prokopy, and Floress 2012).

A challenge of voluntary governance frameworks is they require firms to take action rather than relying on government to mandate actions (Salamon 2002). This raises a key question: why would firms willingly adopt beneficial practices net of agency mandates? While there is a burgeoning literature on the motivations for voluntary practice adoption which come from policy, economics, and sociology to explain firm behavior (Borck and Coglianese 2009; Gibson 1999; Lim and Prakash 2014; Potoski and Prakash 2009; Harrison 1998; Koski and May 2006). VMPs are adopted via individual contracts which makes theories of voluntary practice adoption such as the Club Goods perspective of Prakash and Potaski inapplicable (Potoski and Prakash 2009). However, proposed motivations for action from sociological institutionalism provide a theoretical explanation that fits individual contracting situations (Dimaggio and Powell 1983; Delmas and Toffel 2004).

I specifically draw on expectations regarding institutional isomorphism of practices and plans within environmental management as laid out by Delmas and Toffel (Delmas and Toffel 2004). This choice of framework is motivated by the usefulness of Dimaggio and Powell 1983's exploration of why organizations develop similar structures to other policy areas such as the diffusion of governmental innovations (Berry, Berry, and Sabatier 1999; Dimaggio and Powell

1983; Walker, Avellaneda, and Berry 2011). VMPs, while adopted by firms, are intended to spread across firms via benchmarking or learning and adapting based on experiences and observations of other-firm actions (Bogan 1994; Harrison 1998).

Voluntarily Adopting Engagement

One kind of practice firms can choose to adopt via VMP are those that engage local community members and citizen through public engagement processes. These include practices like the ones suggested by the Governor's Task Force. The engagement practices adopted by firms may have differing goals, intensities of involvement, and procedural guidelines. Yet, on the whole, such practices aim at generating collective learning between firms, regulators, and governments (Fung 2006; Daniels and Walker 1996, 2001; Heikkila and Gerlak 2013).

Firms in Colorado *sometimes* create engagement processes lasting more than a year involving multiple stakeholders (these could be termed CGRs), but they also create one-time engagement processes such as a single meeting or drilling notifications combined with public comment periods. Again, adoption of engagement via VMPs does not establish engagement as the prevailing pattern of behavior. CGRs, such as the Governor's Task Force, occur where collaboration is the principle process by which decisions are made and where engagement occurs over more than a year via repeated interactions (Emerson 2015, 19). Thus, though in building my definition of engagement and deliberation in the proceeding chapters I rely on Emerson and Nabatchi's definitions of collaborative governance and engagement, I do not argue that VMPs create CGRs. Instead, VMPs are one method by which firms can communicate their intention to engage the public in policymaking. Sometimes these practices stop at thin engagement which

creates one way or two way knowledge transfer. Other times VMPs can foster deliberations between firms and residents allowing collective learning(Emerson and Nabatchi 2015b, 18). When both of these are present, I refer to them in Chapter 1 as collaborative VMPs referring to the fact that they connect private and public actors to accomplish new purposes via consideration of resident interests and concerns. This adoption of engagement and deliberation meets the full definition of collaborative governance laid out above, even if the form and function of the governance arrangement is quite different from a CGR.

Adopting engagement in Colorado

While firms may express their intentions to deliberate through VMPs, deliberations may also form organically, grow out of a less definitionally restrictive engagement practice, or be motivated by other regulatory mechanisms (Gehrke 2014; Roberts 2004; Fung 2006). As part of its regulatory process, Colorado maintains a citizen complaint forum which allows individuals who are negatively impacted by oil and gas to file a request for the state to investigate their claims (COGCC 2017).

To explain why citizens complain thus initiating engagement, I draw on the Protective Action Decision Model (PADM)— an approach which allows me to develop an analysis of how management practices can impact citizen perceptions and local actions (Lindell and Perry 2012). The PADM is developed as a model for assessing citizen disaster preparedness and response, and in applying it to oil and gas impacts I push the model into a new application (Cheng et al. 2017). However, classifying complaint behavior using the PADM is one of the emergent elements of this project I am most excited about because it connects perceptions about identity, stakeholders

and threats to cognitive and behavioral responses to that threat. This in turn matters for the perceived efficacy and availability of response options (Lindell et al. 2016). PADM makes explicit how individual perceptions and citizen actions shape the choice of citizens to engage with government and firms via the complaint process. Key here is the fact that complaints do not merely create an administrative record but begin an investigative process. Because of the manner in which the complaints are investigated it also creates the potential for moving beyond basic engagement of citizens in the process of governing towards fostering deliberation between citizens, firms and the state agency.

In investigating complaints, the State not only has to provide communication back to residents about how the complaint was addressed, but firms are also apprised of the complaint. This can create discussion via email, phone, or in-person between members from each stakeholder group about how to manage risks at oil and gas sites. Accordingly, not only is the filing of a complaint a potential behavioral response to a perceived risk of oil and gas development, but the filing of a complaint is itself an engagement process (Lindell and Perry 2012; Fung 2006). The form of engagement that occurs through citizen filing of complaints varies greatly. Sometimes they form a simple one or two way communication or discussion between citizens and COGCC. When these discussions involve potential methods of addressing values, interests and concerns of citizen stakeholders, I classify this process as one exhibiting deliberation (Stern and Fineberg 1996).

Thus, Colorado, as a case, provides two different engagement processes— one which is adopted during planning processes via voluntary practice, the other which occurs during drilling and operations via citizens filing complaints. Within both processes not only is the public

involved (engagement) but deliberation (requiring consideration of interests and values) can occur.

The projects of this dissertation build off of these two engagement processes, but, by conducting these analyses as a holistic project, part of the goal is to recognize the engagement that occurs via these processes as part of a larger system of firms and citizens interacting over management of oil and gas risks (Figure 1). While complaints form a downstream method of engaging the public in risk management, and firms may select VMPs that engage the public further upstream in the project planning or development phase of drilling, firms drill repeatedly and citizens complain continually. While firms adopt VMPs at specific sites, the VMPs they adopt are ideally informed by their experiences at other sites. The practices they adopt, in turn, can affect citizen perceptions and behaviors. This in turn can alter the contexts, perceptions, and experiences that lead to citizen complaints and thus the likelihood of future engagement through citizen complaints.

When viewed as a complete process, the process reflects the adaptiveness of governance arrangements. While Figure 1 includes upstream and downstream processes, oil and gas permitting is iterative and downstream processes have the ability to provide feedback to firm plans and procedures moving forward. This is the great promise of collective learning for risk management. By engaging and deliberating, firms can adopt policies can both respond to and inform citizen perceptions and attitudes about oil and gas development. However, the actual practices themselves, too, should be improved, reflecting learning about what worked to meet resident values and interests.

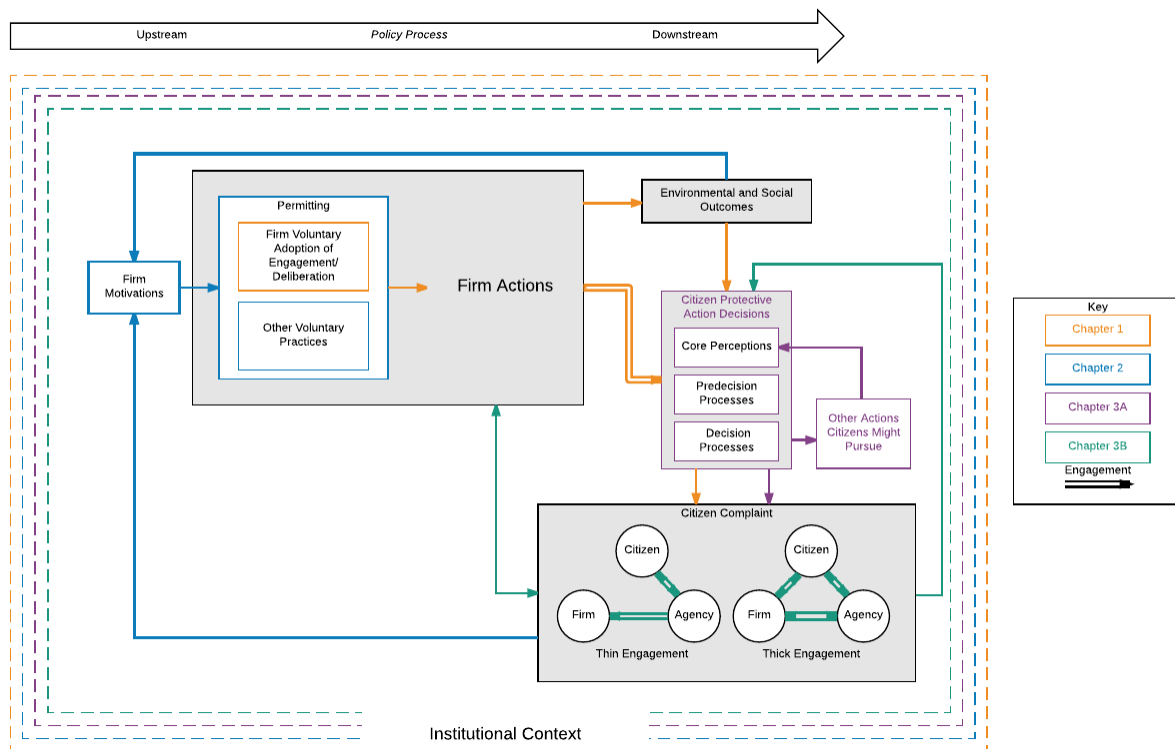


Figure 1: Outline of dissertation and connections between various chapters.

The dissertation is structured as three independent, yet linked studies that connect the voluntary *choice* of firms to engage with residents through VMPs to changes in citizen complaint behavior, and finally, assesses how citizen complaints themselves can create a downstream engagement and deliberation process that has the potential to shape firm practice choice. First, it studies how firms adopting some form of citizen engagement as a voluntary practice can affect the behavioral response of citizens to oil and gas. Second, it evaluates what motivates firms to adopt voluntary practices. Finally, it proposes hypotheses about citizen complaint behavior and elements that enable complaining to itself foster deeper forms of engagement.

FORMAT OF CHAPTERS

While each of the papers included draw on various aspects of each theory, Chapter 1 tests the application of public engagement and stated creation of a forum for deliberations as a tool to promote improved policy outcomes. Specifically, Chapter 1 seeks to evaluate how firm adoption of voluntary engagement practices can alter complaint behavior among residents and especially the comparative likelihood of violation or non-violation related complaints. Using a database of 2700 citizen complaints about oil and gas from Colorado, and a spatially matched case-control design, this project evaluates how engagement and deliberation adopted within the permitting and planning stage are associated with changes in complaint outcomes (Wacholder et al. 1992; Prentice and Pyke 1979).

In Chapter 2, I assess what motivates firms to adopt voluntary management practices. In this chapter, I step back from evaluating practices that focus on engaging public actors and instead evaluate how firms navigate the entire choice set of voluntary management practices. Within this chapter, one of the major components is evaluating how various sources of information and motivations for actions can drive firm adoption decisions. Specifically, the paper evaluates how legitimacy (Bansal and Roth 2000; Potoski and Prakash 2009), coercive pressure (Delmas and Toffel 2004), profit seeking (Rivera 2002), and/or normative pressures (Khanna et al. 2007) enhance the translation of public complaints, fines and warnings towards adoption of new-to-the firm VMPs.

To test each motivation, a census of oil and gas well VMPs from the State of Colorado filed between 2009 and 2015 are collected and within-firm changes are calculated using text

similarity (Mihalcea et al. 2006). Because of the novelty of the measures, which are further discussed in the chapter, each text similarity measure is presented alongside a more traditional measure of institutional motivation. A multivariate model that controls for lagged time variant characteristics of firms and wells is then used to evaluate how legitimacy, coercive pressures, and normative pressures interact with public complaints to produce VMP changes.

In Chapter 3, I also focus on how choice of voluntary management practices, responses to and the submitting of citizen complaints, and attributes of governance promote the formation of principled engagement between residents, governments and firms. Specifically, I evaluate resident decisions to engage in the complaint process and then I evaluate how the complaint process itself can be transformed from simple one-way and two-way participation of residents in governance to thick participation, characterized by principled engagement between residents, firms, local government and the state of Colorado. In this chapter I provide hypotheses about how each of these elements affect perceptions of nearby oil and gas development including the nature of the threat and the identities of critical stakeholders, as well as perceived efficacy in protective actions that can be taken. I use data-driven comparative selection of cases to generate most likely cases for finding causal mechanisms, most difficult cases, and cases most indicative of potentially confounding mechanisms (Seawright and Gerring 2008). Archival document analysis relying on the Colorado Oil and Gas Conservation Commission database, as well as targeted, in-person, semi-structured interviews of citizen contacts are the primary methods of qualitative inquiry. Chapter 3 is presented as two separate works— one focusing on application of the Protective Action Decision Model to the interviews and documents and the other

evaluating factors that promote the translation of the complaint process from a thin participatory process to a thick one, evidencing principled engagement.

METHODOLOGICAL APPROACHES

The chapters here provide a diversity of methodological approaches. Rather than using a single method, I have made an effort to tailor the method of inquiry to the question at hand. In Chapters 1 and 2, I use Bayesian spatial modeling in the R program INLA to evaluate how key covariates effect continuous and categorical response variables (Blangiardo and Cameletti 2015; Rue, Martino, and Lindgren 2012). However, in each chapter I also apply text analytic methods as a method of developing explanatory variables and covariates. Specifically, in Chapter 1, I utilize supervised machine learning to categorize BMPS. In Chapter 2, I apply text similarity methods to construct covariates and dependent variables related to the textual content of VMPs. Chapter 3, meanwhile, applies qualitative methodologies but does so following the suggestion of Weller and Barnes (2015) to use observations from quantitative analysis to inform case selection. As such, the cases selected for study in Chapter 3 were derived primarily from the results of Chapter 1 with the intention of isolating causal pathways leading from firm choice to engage residents to changes in complaint behavior. These methods all align with what I see as my general program of research, which is to combine data analytic methods with traditional quantitative and qualitative designs.

CONCLUSIONS AND KEY FINDINGS

In the conclusion of the chapters here, I provide a summary of overarching themes and describe the new directions and hypotheses for future research. I focus on what I see as the key

lessons-learned from across the projects, especially as they relate to future research in public policy and management, and on our wider understanding of how to manage environmental and human health risks. With these conclusions, I attempt to go beyond policy and management theory and speak especially to public managers who institute, design, and manage emerging technology engagement practices.

In general, I find firms are not currently listening to complainants unless they have a specific institutional motivation. Where firms have a motivation to listen to complainants, complaints can take on the features of thick engagement. However, this thick engagement can improve the usefulness of complaints creating a contradiction where complaints may increase in areas where firms and residents are actively deliberating. While firms could gain from listening to residents, the fact that they do not across the large samples of Chapter 2 may stem from the fact that in agreeing to deliberate over management firms take on the risk of having to honestly address residential concerns which may mean failing to achieve a private policy goal. In terms of the ability of voluntary engagement to be effective in addressing risks, this provides a challenge as firms might not willingly deliberate with residents unless they have a meaningful motivation to do so. Local governments can play a key role in motivating voluntary engagement by via coercion, but in Colorado at least this depends on the ability of local governments to extract concessions from firms in other areas.

An additional challenge discussed in the conclusion is that while I study citizen participation, who participates in complaining is not an equal subset of the US population. This raises key questions about equity in the design of emerging technology engagement practices which I do not address within the chapters here. However, complaints or engagement practices

that only work for retired, landed, or educated individuals will lead to geographic inequalities in where resident concerns are addressed in policy. Thus, governance of emerging risk for oil and gas should continue to consider how to motivate not only firm actions, but citizen ability to actively engage or the benefits of engagement will be limited to subsets of the population and limited to areas where firms face a significant motivation to engage their neighbors.

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Chapter 1: Should we call the neighbors? Voluntary practices, citizen engagement and the potential to address citizen complaints about oil and gas

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ABSTRACT

With over 1,000,000 oil and gas wells within the United States, developing regulations that can take into account diverse geologies, political and social concerns, and local environmental needs is a challenge for regulators. Firm adoption of voluntary management practices is one proposed method of mitigating risks at oil and gas sites, and firms can furthermore choose to use deliberative processes in site planning as one of these practices. This paper tests the potential for adoption of voluntary engagement practices in management by firms to reduce the likelihood of citizen complaints about oil and gas development. Using a dataset of complaints and practices from the state of Colorado, this paper finds that adoption of engagement practices and further deliberation about sites is not associated with altered odds of observing a complaint at a wellsite once other variables are controlled. Additionally, where more VMPs are adopted in general, the odds of observing a complaint are higher. However, when engagement and deliberation are included within these VMPs the magnitude of the association is significantly lower. Another question involves who adopts these VMPs. Large companies, as defined by well counts, are more likely to adopt engagement and deliberation practices that can form the basis of collaboration than are small companies. This indicates that use of voluntary management practices is dependent on the resources available to individual firms, and thus, the environmental and social benefits of such policies are likely to accrue unevenly.

INTRODUCTION

Unconventional oil and gas development (UGD) has dramatically altered the gas fortunes of the United States and Canada via enabling extraction from resources that were previously inaccessible or too costly to access. Yet, despite economic benefits, the scientific evidence regarding environmental and health risks of UGD have remained contested as firms, citizens and regulators often possess differing perceptions of what the risks of development are and how such risks should be addressed (US EPA and Frithsen 2012). The contested nature of risk surrounding

UGD suggests management structures that incorporate the concerns of a wide-range of stakeholders into decision making through participatory governance (North et al. 2014; Small et al. 2014).

Participatory governance refers to a suite of approaches to governing that involves stakeholders in the policymaking and management process (Fung 2006). It is fundamentally defined by who participates, how they participate, and the powers delegated to participants in making decisions and managing processes (Fung 2015). While there is diversity in the types of participatory governance, here I focus on three related concepts being collaboration, deliberation, and engagement. Collaborative governance is,

“the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished” (Emerson and Nabatchi 2015b).

Collaborative approaches to governance have the potential to prove especially beneficial for risk management because of gaps between scientifically estimable measures of risk and firm and citizen perceptions of those risks (Rosa, McCright, and Renn 2013). Specifically, collaborative governance can facilitate learning between different groups (Heikkila and Gerlak 2013), build shared understandings about risk and concerns (Emerson and Nabatchi 2015b), and enable deliberation-based agreements about what policy actions should be taken to address risk and as such it is currently a preferred alternative amongst risk management scholars (Wheeler et al. 2015). Deliberation, or “candid and reasoned communication and information exchange that is structured and oriented toward problem solving” (Emerson and Nabatchi 2015b, 62), is one subprocess that occurs within collaborative arrangements. In this paper I do not study

collaboration as an organization type (Bryson, Crosby, and Stone 2006), but instead, I study engagement and deliberation as key elements that occur as parts of collaborative governance via the choice of public managers to allow firms to adopt public engagement and deliberative practices (T. A. Scott and Thomas 2017). Thus, I build off of Emerson et al's call for collaborative governance to be "used as a broader analytic construct in public administration... (that) enables distinctions among different applications, classes, and scales".

In the United States, use of deliberative practices in managing UGD risk is complicated by the decentralized nature of oil and gas regulation. Individual states permit oil and gas on a location-by-location basis and mineral extraction decisions largely rest on individual firms (Davis 2012). Thus, the power to enact UGD risk management policies that engage diverse groups of stakeholders largely rests on either state regulators mandating such action or private corporations choosing to undertake those actions (Sounders 2005; Wiseman 2010). For firms to develop policies that promote deliberation, they must first choose to engage residents. While deliberation indicates that the voices of stakeholders should have some potential to alter decisions as a result of discussions, engagement merely refers to the inviting of the public into the act of governing (Bingham, Nabatchi, and O'Leary 2005).

One way in which firms can choose to engage stakeholders is through adoption of voluntary management practices (VMPs). VMPs are practices that are recognized as improved relative to normal operations and one of the expectations is that firms will learn and adopt practices based on recommendations from industry as well as their own experience (Bogan 1994). While VMPs constitute a range of possible structural and procedural actions, I focus specifically on VMPs that suggest firms may adopt public engagement as a practice at wellsites.

The American Petroleum Institute (API) publishes guidelines for engagement which includes the provision for firms to,

“Identify and engage with relevant stakeholders, as required, including communication strategies for contractors, community members, government officials, employees, and other stakeholders as needed” (“Community Engagement Guidelines: ANSI/API BULLETIN 100-3” 2014, 11).

Thus, API recommends firms adopt such practices— they are not formally required by the state or by API but can be chosen and adapted by a firm. Practices such as the one above, if adopted, allow communication between residents and firms, but firms also may go beyond communication and notification to actively engage citizens in the process via formal adoption of statements that firms will collaborate. For example, on its well permit in Western Colorado, one company wrote,

“This is an exploratory well; all BMP's are currently being developed through close communication with the surface/mineral owner and the community at large.”

At another location, a wide set of VMPs applied to a group of wells stipulated that,

“[T]he desires and concerns of residents will be taken into consideration when determining the number of rigs to be operated on a CD pad or in a neighborhood. Consideration for safety, noise, traffic and visual impacts should be taken into consideration during the decision-making process with the goal of limiting those impacts to what is acceptable to area residents.” (“Rifle, Silt, New Castle Community Development Plan (RSNC-CDP)” 2017).

In these examples, a range of community engagement practices are selected by firms that range from basic communication and notification to deliberations to principled engagement with the potential for determinations. Moreover, the source of VMPs adopted by firms can include

recommendations from industry groups (example 1), firm engagement with community (example 2), and negotiations with local governments and community groups (example 3). In each case, the practices adopted are voluntary, but potentially leverage public participation, engagement, or collaboration to accomplish private gains that may correspondingly improve public outcomes.

This paper evaluates whether voluntary management practices in which firms agree to engage in deliberation with the public alter the likelihood and type of citizen complaints about oil and gas development. Additionally, it evaluates how voluntary management practices adopted in the planning stage may affect the willingness of firms to engage in addressing complaints.

Using a database of citizen complaints from the Colorado Oil and Gas Conservation Commission (COGCC), I develop a spatially matched case-control design to evaluate how the selection of voluntary adoption of engagement and deliberation as management practices within the permitting and planning stage is associated with changes in complaint outcomes (Wacholder et al. 1992; Prentice and Pyke 1979). By relying on public complaints as the dependent variable, and separating these complaints into those that involve physical evidence of an externality and those that do not, I provide a test of how voluntary adoption of engagement and then deliberation as part of the permitting process is associated with changes in perceived and empirically verifiable risks of oil and gas development.

Though more widespread adoption of voluntary management practices is associated with higher odds of a complaint about that location, potentially a result of the fact that firms are more likely to adopt practices that limit impacts where citizen complaints are likely to occur, I find no evidence that use of policies supporting deliberation are associated with changes in the odds a citizen complains about a particular well as opposed to others nearby. Furthermore, I identify

extremely few cases where a company has 1) adopted a voluntary collaborative process and 2) a complaint leads to a violation. Thus, adoption of practices that encourage citizen involvement in site planning, operation, and management may not have an appreciable effect on complaints. However, the lack of complaint and violation co-occurrence under such policies may suggest that companies who adopt collaborative practices are less likely to have physically identifiable risks, even if citizen complaint behavior does not change. As a result, the effectiveness of engagement adopted through voluntary practices may be driven less by the content of the practices and more by the attributes of the companies adopting them.

THEORETICAL RATIONALE

Risk Management, Collaboration, and Principled Engagement

Major approaches to environmental risk management including the Risk Governance Framework (RGF) (Renn and Walker 2008) and the National Research Council 2009 report “Science and Decisions” (National Research Council 2009) advocate use of public engagement as means of incorporating actors with differing knowledge bases and concerns into the decision making process. Broadening of the risk debate beyond analysis and experts to include actors, stakeholders, affected individuals, and the lay public is termed an analytic-deliberative process for risk management. Analytic-deliberative processes are deliberation around scientific evidence, with the added goal of “addressing the significant concerns of the interested and affected parties, and to make this information understandable and accessible to public officials and to the parties” (Stern and Fineberg 1996).

The benefits of broadening debate are greatest when honest and reasoned conversations

about issues, values, and concerns— termed principled engagement— occurs (Emerson and Nabatchi 2015b; Coenen 2009; Oels 2003). Principled engagement can lead to benefits such as greater trust in other stakeholders, increased sense of legitimacy in the governing process, and a shared commitment to goals such as mitigating impacts (Emerson and Nabatchi 2015b).¹ As introduced in the introduction, principled engagement is a subprocess that occurs within collaborative governance. Collaborative governance approaches are one type of engagement practice. Engagement varies in terms of who participates, how they participate, and how participation is tied to policy outcomes (Fung 2006; Roberts 2015; Nabatchi and Amsler 2014; O’Leary and Bingham 2003). Engagement can promote instrumental, normative and substantive benefits such as better policies, enhanced civic society, or improved trust (T. Scott 2015; Emerson and Nabatchi 2015b; Koontz and Thomas 2006; Coenen 2009; Coglianese 2002). While engagement processes are often led by public managers, government can instead invest technical capabilities, personnel time, and financial resources towards supporting firms engaging with a wide range of stakeholders thereby allowing private firms to create public engagement processes (Koontz 2004). In these instances, government does not choose to engage itself, but it structures the costs, opportunities, and rules so as to motivate firms in the direction of deliberating without top-down enforcement (Koontz 2004; M. A. Delmas and Terlaak 2001; Bingham, Nabatchi, and O’Leary 2005).

In Colorado, oil and gas permits allow firms to adopt engagement practices through negotiated agreement. Engagement adopted in this way can be termed a kind of voluntary management practice (VMP) (Coglianese and Nash 2016; Khanna et al. 2007). These practices

¹ Though these are not CGRs that I am studying, I use principled engagement because I find it a tractable and theoretically testable operationalization of the collaborative learning work by Heikkila and Gerlak (Heikkila and Gerlak 2013) and Walkers and Daniels (Daniels and Walker 1996).

are part of a wider governance form called management-based regulation in which “firms are expected to produce plans that comply with general criteria designed to promote the targeted social goal” (Coglianese and Lazer 2003).

VMPs can be divided into subclasses of procedural and structural (D’Arcy and Frost 2001). Procedural VMPs typically involve either planning, maintenance and management, or education and outreach, while structural VMPs utilize engineering controls or options. VMPs have been used for reducing non-point source water pollution and management of storm and wastewater (Urbonas and Stahre 1993), reducing the ecological damage created by resource extractive industries such as logging (Nesbit 1996), or for limiting genetic and environmental risks of aquaculture (Tucker and Hargreaves 2009). In the oil and gas sectors, use of location-specific management practices as a management tactic has been supported by efforts such as that of the Intermountain Gas Best Management Practice Project, which has collected and catalogued VMPs for use by oil and gas companies. These include VMPs like the ones discussed in the introduction (Getches-Wilkinson Center 2013).

While firms may be required to include specific elements choosing VMPs, they are flexible by-design, allowing firms to adopt practices that will help them balance private and public goals (Van Vliet 1993; Fiorino 1999; Coglianese and Nash 2016). Firms themselves may be motivated to adopt voluntary practices in order to reduce uncertainty, meet field-specific or external norms (Bansal and Roth 2000; Potoski and Prakash 2009; Khanna et al. 2007), be coerced by threat of potential formalization of regulation (M. Delmas and Toffel 2004), or a belief that some combination of the above factors make voluntarily self-regulating economically beneficial (Rivera 2002; Segerson and Miceli 1998).

From the perspective of a public manager, making practices voluntary can encourage interdependence and shared responsibility in governance, leveraging managers' local knowledge in order to select optimal regulatory strategy (Bogan 1994; D'Arcy and Frost 2001; Coglianese and Nash 2016; Fiorino 1999). In theory this makes VMPs a cost-effective and politically expedient method achieving a wide variety of environmental and policy goals (Strassler, Pritts, and Strellec 1999).

Despite firm and governmental motivations for voluntary practice adoption, such practices have limited records of success (Coglianese and Nash 2016). False reporting (Kim and Lyon 2015), lack of stringency (Borck and Coglianese 2009), failures to monitor (Prakash and Potoski 2007), and design flaws all of have been identified as rationales as to why voluntary programs have not improved environmental policy outcomes. Few of these studies have focused on voluntary use of engagement practices. Evaluating the efficacy of engagement is a challenge because such policies are not adopted as a method of mitigating only physical harms and externalities but also are intended towards addressing and learning about citizen concerns ("Community Engagement Guidelines: ANSI/API BULLETIN 100-3" 2014).

Where engagement goes beyond one and two-way communication and instead becomes a process for learning, discussing and deciding, the engagement becomes *principled* (Emerson and Nabatchi 2015b). The resulting discussions can take the form of deliberations which allow knowledge sharing, creation of new knowledge, and joint decisions (Heikkila and Gerlak 2013; Emerson, Nabatchi, and Balogh 2012). This process of first engaging stakeholders and then, second, deliberating over stakeholder interests, is a form of collaborative governance, defined by first bridging of the public and private spheres and second, deliberative policy outputs, or the

accomplishing of public policy purposes which otherwise could not be accomplished (Emerson and Nabatchi 2015b). For the engagement practices of firms to be classified as a kind of collaborative governance, both engagement and second deliberations are necessary conditions. This does not mean that collaborations or cross-sector partnerships develop (Bryson, Crosby, and Stone 2006), but instead, refers to a method of governance where a broad range of stakeholders are involved in management to accomplish new purposes.

Because deliberations are expected to improve policy choice and design and also improve social outcomes through the intrinsic benefits of engagement, evaluating the efficacy of collaborative VMPs (those with both engagement and deliberation) requires considering physical and social outcomes. In essence, engagement practices that improve physical outcomes but leave communities distrusting of company actions only capture part of the potential benefit that can be achieved via deliberation (Coenen 2009). For firms, learning via engagement and then deliberation should produce new practices, altered decisions, or new approaches to meeting the needs of the public. Thus, there is an instrumental purpose in engaging. For residents, engaging with firms and participating in deliberations may alter perceptions of the threat, perceptions of the stakeholders involved in managing a risk, or perceptions of actions that can be taken in regards to a risk— a normative rationale for deliberations (Lindell and Perry 2012). These altered perceptions affect the cognitive processes that lead to citizens taking action on risks (Lindell et al. 2016; Wachinger et al. 2013). While changes to perception and knowledge of risks are usually unobserved without a survey, behavior change to is an output of learning processes (Gerlak and Heikkila 2011; Daniels and Walker 1996).

One potential action citizens might take is to complain to governments about the local

problems associated with oil and gas development (Dong et al. 2011; White and Trump 2016; Weersink and Raymond 2007; COGCC 2017a). Citizen complaints are potentially valuable for assessing combined social and environmental outcomes of voluntary adoption of complaints because they require both perception of a risk and an environmental or social cue (Lindell and Perry 2012). Citizen complaints provide a solution to assessing both whether engagement can reduce the likelihood of empirically estimable risk events such as spills, but also capture non-empirically estimable events—upset neighbors, hard to quantify odors, or rude interactions with workers, thus providing administrative evidence of engagement can influence perception, trust, and acceptance of risk in nearby neighborhoods. Even if complaints are noisy reflections of environmental outcomes (Warwick and Ortolano 2007), they nonetheless require citizens to take a specific action in regards to a threat based on some combination of perceptions and cues (Krendel 1970). Thus, complaint likelihood could be altered by either the instrumental (reduced spills, reduced leaks, better mitigations) or normative benefits of firms choosing to engage with citizens. Accordingly, this paper utilizes complaints as dependent variable, and tests the hypothesis that,

Adoption of engagement and deliberation through voluntary management practice adoption is associated with a reduced probability of public complaints about oil and gas development (H1).

Whether or not complaints reflect environmental harms or noise created from concerns about development, the above hypothesis is based on the ability of deliberation to change perception and thus resulting behavioral responses to oil and gas development (Dong et al. 2011; Lindell and Perry 2012). However, separating the structural and instrumental benefits of

engagement even within complaints is worthwhile. From a risk management perspective, public risk perceptions and empirically estimable risks are can both be equally valid, reflecting that differences arise in how individuals accept accept and value different kinds of potential harm (Fischhoff 1995). For corporations operating in mineral extraction industries, the meaning of such risks may be very different in practice. For example, while an event such as a spill or failure to follow remediation rules is empirically verifiable, externalities such as odors or noise occurring at night may upset nearby landowners and present risks that are not easily quantifiable or trackable by companies or regulating agencies. Because engagement can hypothetically produce learning, shared commitments and definitions that drive perceptions of these impacts, the benefits of engagement for such non-empirically verifiable risks is likely be greater than the potential for verifiable risks, especially since firms are likely to know more than local residents about structural factors to reduce events such as spills.

Adoption of engagement and deliberation will be associated with reductions in that complaints lead to NOAVs but a comparatively larger reduction to complaints that do not lead to NOAVs (H2).

METHODOLOGY

Case Selection and Model Rationale

To test how firm adoption of engagement and deliberation, which together indicate voluntary choice of collaboration at sites is associated with changes in complaint outcomes, I develop a spatially matched case-control design (Diggle, Morris, and Wakefield 2000; Wacholder et al. 1992). Case-control studies are a common methodology within epidemiology and biostatistics where there is a need to study a rare disease or outcome (Schlesselman 1982).

My cases and controls are all selected from oil and gas locations within the state of Colorado.

Colorado maintains a comparatively restrictive regulatory environment which limits the current generalizability of results but creates a situation where other states may look to Colorado as a regulatory leader (Davis 2012). For research purposes, studying Colorado is advantageous because the State publishes documents describing voluntary management practices that are submitted as part of the drilling permit application process. Moreover, the State actively maintains a database of public complaints about oil and gas related sites or incidents.

Any affected resident or landowner within the state of Colorado is allowed to file a complaint about an oil and gas site. While there are nearly 5,000 complaints stored on the State of Colorado website, some of these complaints lack key identifying data such as the location of residence for the complainant or the site about which they were complaining. In total, I identify 2,700 fully complete complaints (up through May 2015), or complaints for which a complainant address and likely well location could be established, ranging in date from 1992 to 2015.

Given the number of well locations in Colorado (approximately 80,000), and the number of potential cases (approximately 2,700 with some repeat observations), no more than 3% oil and gas locations could potentially experience a complaint. As such, a case-control study provides the benefit of selecting controls that are more proximate to the cases while improving the efficiency of the model fitting (Keogh and Cox 2014).

Cases and Controls

I select controls for the complaints by considering the process of filing a complaint as a choice between possible wells around a residential address. For any individual A the question is

not if they will complain or not, but about which well they will file a complaint. Given their location, there is the potential to complain about any well X_n , but there is likely the strongest potential to complain about wells which are closer to the address of the complainant X_1, X_2, X_3 .² These wells form a choice set from about which an individual can choose to complain, and thus provides a reasonable selection criteria for matching case wells to control wells. Specifically, I randomly select three paired wells that are permitted at the time of the complaint and are within the radius of distance from the complaint address (as given by the complainant) to the oil and gas location about which the complaint occurred. Thus as given residential addresses become more precise (moving from state to county to locality to street), the number of possible controls decreases. By increasing the radius of the selection distance to include the first three wells that are randomly within the smallest possible radius, I select controls that make up a possible choice set for the complainant to complain about. A map of the resultant cases and controls is provided in Figure 1, with the dim lines created by cases where residential addresses were far from complaint wells.

² While other factors besides space may drive this choice such as level of production, number of well heads, etc, spatial proximity is merely the selection criteria used for controls. In practice, wells within a spatial area are generally more similar in regards to covariates than spatially disparate wells. Thus, I determined this was the best control selection strategy. A follow up method could be to select potential complainants based on voter roles, however, this would only allow studying registered voters as complainants.

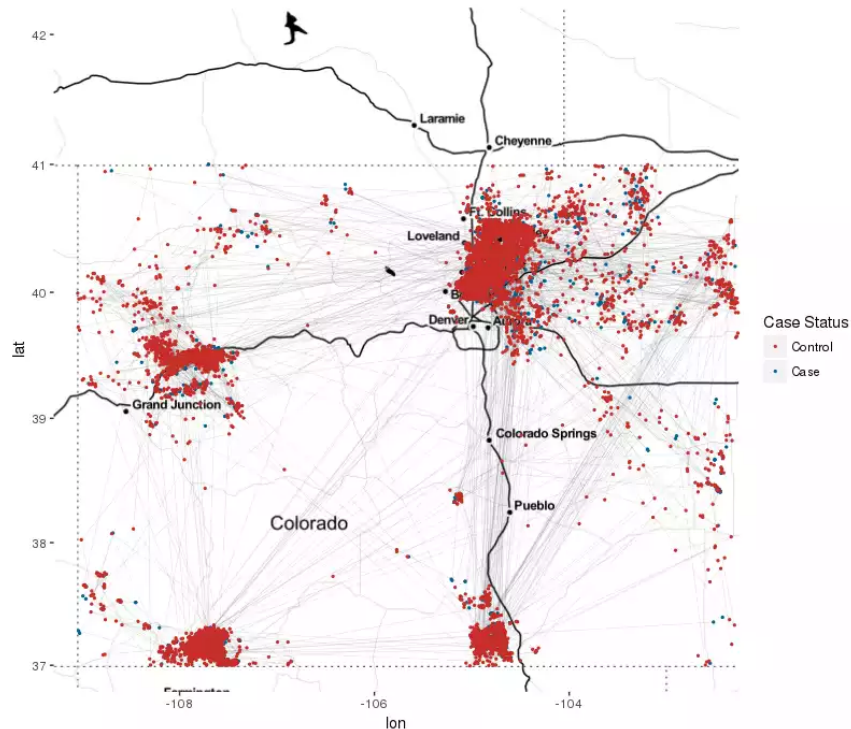


Figure 1: Map of cases and control locations in the state of Colorado. For each case, wells were selected within a set radius. The lines in the graph above demonstrate where the radius effectively became the state of Colorado due to imprecision in the estimate about address locations and/or landowners who lived off site (a person in Colorado Springs complaining about a well in Southern Colorado, for example).

While case-control designs can usually be pooled and analyzed in a similar fashion to cohort studies (Breslow 1996), the spatial clustering of wells due to the selection mechanism means there may be unobserved cluster-specific variables that may influence the classification of a well as a case or control. Essentially, because each case and control well is similar in spatial characteristics they may also be more likely to have unmodeled heterogeneity. I thus adopt a clustered/clumped logistic likelihood, which assumes that for an outcome Y with a number of trials equal to 4 (1 case+3 controls), there can be only one possible positive binomial outcome, and thus the total probability of observing a case for a given complaint group is 1, but the probability of any one observation having a complaint is $1-(1-p)^n$ (Koch, Tolley, and Freeman

1976). The likelihood for the clustered binomial model is given by the equation,

Eq. 1

$$Prob(y_i) = \binom{n}{y} p^y (1-p)^{n-y},$$

where n is the number of cases and controls for a complaint and p is the probability of a complaint for each observation i of length n . Using a standard logistic link function, we can model k independent experiments with outcome $y_1 \dots y_k$ as,

Eq. 2

$$y_i = \text{Binomial}(k, 1 - (1-p)^n).$$

In my case, the outcome variable Y at location i in k is given as a function of well location structural attributes S_i , well location production and method Attributes R_i , well location community and environment attributes C_i , well location policy attributes L_i , latent processes Z_i , and latent model N . As such, the full likelihood for each model can be expressed as,

Eq. 3

$$\log(Y_i) = \alpha_i + \beta S_i + \beta R_i + \beta C_i + \beta L_i + N(Z_i).$$

Under this basic model, the key independent variables, VMP presence, principle engagement VMPs, and deliberation VMPs are part of the well-location policy attributes. I describe these variables, the other covariates, and the latent models N in the remainder of the methodology section.

Explanatory and Dependent Variables

Explanatory Variable: Voluntary Management Practices

To code the independent variables for my model, which are the presence of VMPS and

specifically, the presence of VMPS which utilize either principled engagement and or deliberation, I rely on supervised machine coding of Colorado Form 2 and 2A Best Management Practices. Colorado Form 2 and 2A documents are the permits permitting drilling at an oil and gas location and they allow adoption of “Best Management Practices” (a type of VMP) being,

“practices that are designed to prevent or reduce impacts caused by oil and gas operations to air, water, soil, or biological resources, and to minimize adverse impacts to public health, safety and welfare, including the environment and wildlife resources.” (Colorado Oil And Gas Conservation Commission 2008)

The agency can request a firm adopt VMPs but there is flexibility in what practices firms adopt and VMPs that are required of firms for a permit to be awarded are identified separately as “Conditions of Approval.” Examples that serve as potential cases of engagement being used are presented in Table 1.

I develop a two stage model for coding practices. First I code whether engagement occurs. Engagement is coded where the VMP states the public will be involved or consulted. Second, I code deliberation. For deliberation, the engagement had to create a potential for change in practice based on conversations or consideration of concerns. Where both of these are present, I use the term “collaborative” to indicate that the joint presence of engagement and deliberation is indicative of bridging public/private spheres to accomplish a management purpose.

Table 1: Example VMP Text and Codes

Form 2 Voluntary Management Practice Text	Location (Company)	Collaborative Governance Properties (Both are necessary conditions for classification of VMP as collaborative)	
		Engagement	Deliberation: Can practices change via learning from engagement?

"KMG/Anadarko hosted a community forum on June 24, 2015 from 4:00 to 7:00 pm at the Fort Lupton Recreation Center."	Location # 332882 (Anadarko)	Yes	Yes— occurs prior to submission of permit.
"We will also conduct a community meeting in advance of our operations."	Location # 336330 (Crestone Peak)	Yes	Yes—meeting can influence decisions made during operations.
"Notice will be provided in the following forms; by a sign, of sufficient size, placed on the property for 7 or more consecutive days prior to the meeting, by newspaper advertisement at least 5 but not more than 15 days prior to the public meetings, and by courtesy letter."	Location # 423393 (Extraction)	Yes	Yes— because of meetings, not because of letters.
"Surface owner and building unit owner within 1000' notified."	Location # 326624 (Elm Ridge)	Yes	No
"Ursa will also notify the COGCC 48 hours prior to start of temporary frac operations."	Location # 416703	No— citizens/residents are not engaged directly	NA

To code engagement practices I use the program RTextTools (Jurka et al. 2011). The benefit of supervised machine learning as opposed to hand coding is it allows efficient coding of documents; however, there is a potential tradeoff in accuracy versus a human coders who are generally more accurate in assigning categories, though not necessarily more consistent (Jurka et al. 2011). To train my learning model, I rely on the Intermountain Oil and Gas BMP Projects'

(IOGBMP) database of oil and gas best management practices (Getches-Wilkinson Center 2013).

I filter the IOGBMP database to select VMPs that the IOGBMP coded as community related. I then hand coded these community related management practices into those that exhibited engagement and those that went beyond engagement to include potential for deliberation. As a result, management practices were classified as general practices or collaborative practices following this two stage procedure (Figure 2).

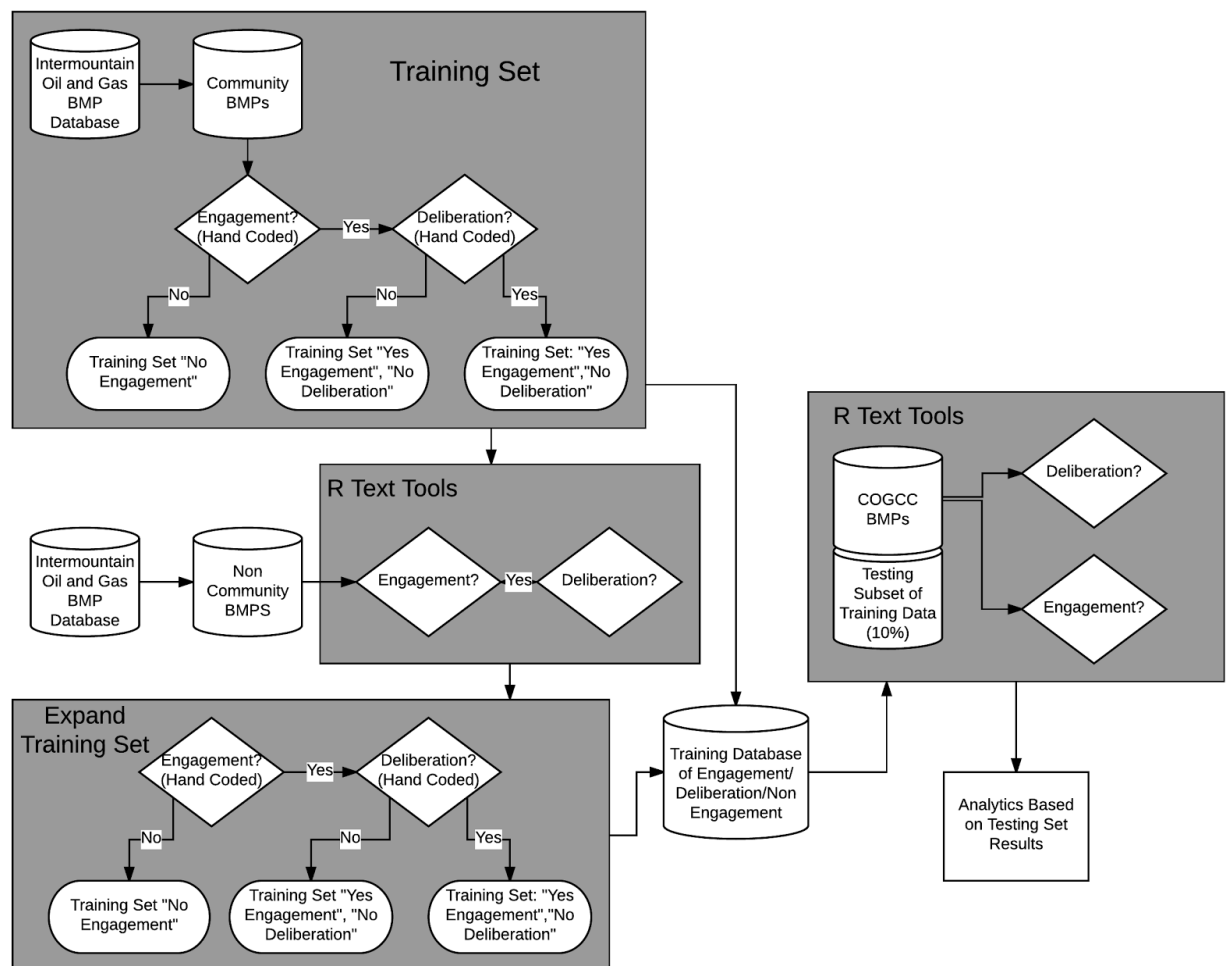


Figure 2: Diagram of Supervised Machine Learning method. The coding process was a two stage process. Additionally, feature extraction for VMPs was conducted in AlchemyAPI so that VMPs were limited to subjects nouns and verbs to remove extraneous words.

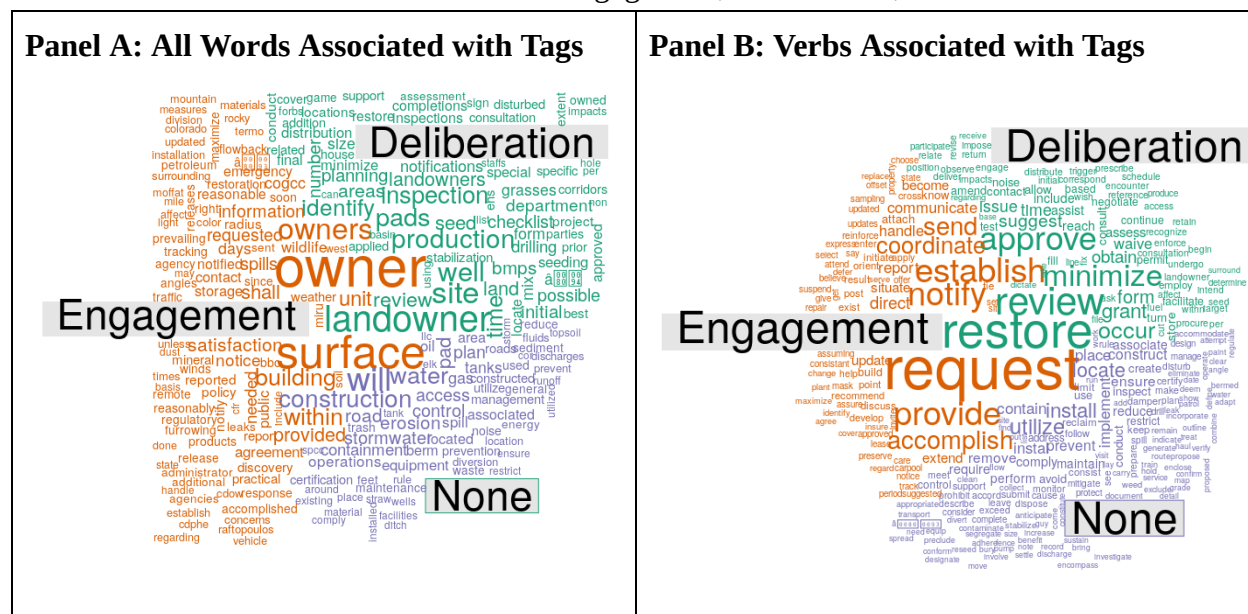
Because of the relative rareness of firms selecting collaborative practices, I used these hand coded collaborative practices to identify non-community related VMPs in IOGBMP database which may also have used engagement and deliberation but were not explicitly tagged by coders for the IOGBMP project as aimed as related to addressing community concerns. I then assigned manual codes to this set of practices as well in order to produce a larger training set for my model.

Because supervised machine learning works best when the most relevant features to the learning task are included while irrelevant features are excluded, I processed each one of the community related VMPs using IBM Bluemix's AlchemyAPI and performed relation extraction to limit text to direct objects, verbs, and subject thus narrowing the number of features (Turian 2013). By breaking the management practices into subjects, direct objects, and verbs, I limit the number of features the supervised learning model needs to fit to just the key elements of the sentence. I fit the learning model using an ensemble approach that combines the results of support vector machines (SVM) (Joachims 1998), Semantic Latent Dirichlet Association (SLDA) (Guo et al. 2009), a random forest classifier (R FORESTS), a tree-based classifier (TREE) (Chen 2006), and a maximum entropy classifier (MAXENTROPY) (Cai and University of Guelph. Department of Computing and Information Science 2007). The goal of these models is to use different algorithms to replicate the classification codings exemplified in Table 1.

The results of the model trained on the hand-coded dataset are in Table 3, with statistics shown for a test set of the hand coded data that was held out for the training run. Finally, I apply the model resulting from this second training to the data for the the sampled location from

Colorado, again relying on IBM's AlchemyAPI to perform feature extraction prior to the coding process. The verbs tagged within these VMPs are in Table 2 in panel B while all words within the VMPS are tagged in panel A. Notably within these tagged words, surface owner and landowner consultations are all brought up as parts of engagement. However, VMPs that only utilize landowner or surface owner consultations may lack the diversity of interests that might be necessary to achieve maximum benefits in terms of normative and instrumental benefits of engaging public actors in decisions (Webler and Tuler 2006).

Table 2: Words and Verbs associated with Engagement, Deliberation, and General VMPs



The analytics below repeat the two level coding process demonstrated above, where VMPs were coded as demonstrating a commitment to engagement, and based on that coding, if such VMPS also demonstrate a potential for deliberation. Because thin engagement processes promise only limited benefits stopping at engagement alone provides a poor reflection of those practices which are most likely to produce benefits, being ones that have the potential to foster

collaborative learning outcomes. Thus I provide individual codes for both engagement and deliberation, with the recognition that deliberation occurs when engagement expands beyond involving the public to informing decisions.

Firms selecting to engage local residents and then, based on that, utilizing engagement to inform their decision processes via deliberation has the potential to foster collaboration as an action linking groups in partnerships across sectors (Bryson, Crosby, and Stone 2006). However, I do not observe the processes of collaboration, but instead the promise of firms to engage and deliberate. Thus, this measure does not capture whether residents actually participated or whether deliberations occurred. Instead, these codes provide evidence of firm willingness to adopt first, participation (step 1 codes), and then deliberation (step 2 codes). This is potentially beneficial as the intent engage or deliberate is what is formally adopted via policy within a management-based regulation framework. I refer to the joint occurrence of engagement with deliberation based on the definition of collaborative governance given by Emerson and Nabatchi (2015) where collaborative governance is,

“The processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished.”

Where firms engage with residents the first part of the definition is met, while using feedback in decision making reflects accomplishing goals which otherwise might be left unmet.

Table 3: Supervised machine-learning analytics. Precision is the rate of correct tags/retrieved tags whereas recall is the rate of retrieval. Coverage is the percentage of documents coded based on consensus in the ensemble approach.

	No Engagement		Engagement		Deliberation	
Model	Precision	Recall	Precision	Recall	Precision	Recall
Support	0.93	0.99	0.91	0.62	0.47	0.50

Vector Machines						
Semantic Latent Dirichlet Analysis	0.92	0.96	0.75	0.56	0.58	0.62
Random Forests	0.91	0.99	0.89	0.5	0.47	0.50
Tree Based Classifier	0.92	0.94	0.64	0.56	0.48	0.50
Maximum Entropy Classifier	0.95	0.88	0.55	0.75	0.58	0.62
Ensemble Approach (combining all models above)			Coverage	Recall	Coverage	Recall
			0.79	0.97	0.86	0.97
	% Coded Correctly					
	95%		68%		NA	
					91%	16%

Of wellsites included in this sample, engagement VMPs are present at 379 wellsites while deliberation VMPs are present at 289, with 23 of the sites being identified by the algorithm as having deliberation but not necessarily engagement. This is out of a sample size of 9964 oil and gas locations. Thus, engagement VMPs are rare in the sample— occurring at a rate of less than 4%, with deliberation adopted even more rarely.

The overall rarity of engagement makes automatically identifying those VMPs that promise engagement difficult. As a result, in building an ensemble model for coding VMPs, it is critical to emphasize recall rather than precision as it is most critical to identify rare occurrences of engagement even if this attenuates the effect of engagement overall. Overall, the model correctly coded 68% of engagement VMPs and 95% of non-engagement VMPs. This means that

while there will be measurement error on both sides, the majority of engagement-enhancing VMPS are identified, some non-engagement are included in the engagement coding, and some engagement enhancing VMPs are classified as non-engagement enhancing. The lopsidedness stems from the relative rareness of the intervention, as supervised algorithms are less effective at classifying rare categories. The effect of this error is to attenuate the modeled effect of engagement on complaints, and thus, my results should not be taken as the marginal return on either engagement or deliberation. Instead, this research is a first effort to quantify an effect of these processes on the combined social and physical dimensions of oil and gas risk.

Dependent Variable: Complaints

The complaints I code as the dependent variables cases are generated as part of the Colorado oil and gas management process. The State of Colorado, under the Colorado Oil and Gas Conservation Commission (COGCC), maintains a database of complaints regarding oil and gas development. The complaint system is integrated into Oil and Gas regulation as a mechanism of alerting the state government to a potential violation of its many rules and statutes. According to Colorado law,

“Any party who wishes to file a complaint regarding oil and gas operations is encouraged to submit a Form 18. The Director shall investigate any complaint and determine what, if any, action shall be taken in accordance with Rule 522” (COGCC RULE 336).

Some level of physical evidence is needed in order for a violation to be pursued by the agency. When enough evidence exists a Notice of Alleged Violation (NOAV) can be filed. Specifically, the law states,

“If the Director, on the Director's own initiative or based on a complaint, has reasonable cause to believe that a violation of the Act, or of any rule, regulation, or order of the Commission, or of any permit issued by the Director, has occurred, the Director shall cause the operator to voluntarily remedy the violation, or shall issue an NOAV to the operator. Reasonable cause requires, at least, physical evidence of the alleged violation, as verified by the Director” (COGCC 522, pre-March 2, 2015).

While there are many variations in the potential path which the complaint process could take, any correspondence between corporations, complainants, and the state agency (particularly agents operating under the director) is recorded in the database along with a closing date if the case is closed. This variation in possible complaint outcomes makes it possible to test both social and physical elements of unconventional oil and gas development risk, while providing many possible realizations of the dependent variable. While the most basic model that can be fit is the simple likelihood of a complaint (Full Model), I also break complaints down into those that are identified with a NOAV versus those that result in no violation notice. Since a NOAV can only be filed in the case of physical evidence of a violation, I use these NOAV producing complaints to represent physical manifestations for risk, while I argue those complaints that have non-NOAV reflect local perceptions of oil and gas risk net of clearly defined environmental and social impacts. Because the state agency investigates complaints, there may be bias in what constitutes physical evidence and thus a NOAV; however, in the case of noise complaints, water complaints, or air complaints there are also specific regulatory requirements for pollution which are tested scientifically removing some of the subjectivity. I fit separate logistic regression models for the likelihoods of NOAV related complaints compared to no complaints (Notice Model) and non-NOAV related complaints compared to no complaints (No Notice Model).³

³ At the time of the writing there is no multinomial model that considers spatial clustering or dependence without generalizing a poisson models which given the multilevel effects in this model soon becomes intractable.

Statistical Covariates

Because oil and gas sites exist in geographic space, the first law of geography applies to our analysis of complaints, ie: wells that are closer to each other spatially are likely more similar due to factors such as underlying geologies, neighborhood characteristics, and environmental characteristics. I address the possible correlation in outcomes by using the Stochastic Partial Differential Equation (SPDE) approach of Lindgren et al. 2011 (Lindgren, Rue, and Lindström 2011). I assume that the spatial latent likelihood of a complaint can be modeled using a Gaussian Markov Random Field (GMRF) that there is a spatially continuous process that drives complaints. I model this using a random intercept derived from a Matern correlation function (Blangiardo and Cameletti 2015), such that the intercept for any individual observation is conditional on its location within the GMRF.

Because this model is computationally intensive, I fit it using the Integrated Nested Laplace Approximation process adopted by the R-INLA program (Rue, Martino, and Lindgren 2012). In addition to allowing for inclusion of the consideration for spatial correlation in the model, adoption of a Bayesian model has the benefit of taking the data as given or pre-existing and providing uncertainty estimates for coefficients about future expectations based on that data. This is fitting given that the complaints observed are one-time realizations of an actual administrative process from which all available data was collected rather than a sample from a continually occurring process (Gill and Witko 2013).

As covariates I also include a number of structural, management, drilling, and physical characteristics that may have been associated with complaint likelihood. These variables are described in greater detail in Table 4.

Table 4: Covariates for the Case-Control Model

Variable	Measure	Description	Source
Structural Attributes			
Condensate Tanks	Count	How many condensate tanks are at the well location?	Form 2 (COGCC 2015b)
Gas or Diesel Motors	Count	How many gas or diesel motors are at the well location?	Form 2
Electric Generators	Count	How many electric generators are at the well location?	Form 2
Gas Compressors	Count	How many gas compressors are at the well location?	Form 2
Multi-Well Pits	Count	How many multi-well pits are at the well location?	Form 2
Drilling Pits	Count	How many drilling pits are at the well location?	Form 2
Water Tanks	Count	How many water tanks are at the well location?	Form 2
Cavity Pumps	Count	How many cavity pumps are at the well location?	Form 2
Gas Pipeline	T/F	Is there a gas pipeline at the well location?	Form 2
Oil Tanks	T/F	Are there oil tanks at the well location?	Form 2
Flare	T/F	Is there a flare at the well location?	Form 2
Production Pits	Count	How many production pits are at the well location?	Form 2
Electric Motors	Count	How many electric motors are at the well location?	Form 2
Pump Jacks	Count	How many pump jacks are at the well location?	Form 2
Water Pipeline	T/F	Is there a water pipeline at the well location?	Form 2
Dehydrator Unit	Count	How many dehydrator units are at the well location?	Form 2
Fuel Tanks	Count	How many fuel tanks are at the well location?	Form 2
Drilling Attributes			
Water Volume	Numeric	Volume of produced water	COGCC Production Data (COGCC 2015b)
Oil Volume	Numeric	Volume of produced oil	COGCC Production Data
Gas Volume	Numeric	Volume of produced gas	COGCC Production Data

Well Status=Producing	T/F	Producing at well location	COGCC Production Data
Hydraulic Fracturing	T/F	Hydraulic fracturing at location	Fractracker (Leiter et al. 2017)
Horizontal Drilling and Hydraulic Fracturing	T/F	Horizontal drilling at the location	Fractracker
Physical Location and Environmental Attributes			
Tract 200% Poverty	Numeric	% of Population under 200% Poverty	US Census (2013)
Population Density	Numeric	Population density of the census tract	US Census (2013)
Sensitive or Restricted Wildlife Area	T/F	Location is in a sensitive or restricted wildlife zone	COGCC GIS Data (COGCC 2013)
Distance to Domestic Water Well	Numeric	Distance to nearest domestic water well	Colorado DWR
County	Random Effect	County of well location	Form 2
Distance from Complaint	Numeric	Size of radius for selecting controls	Calculated
Space	SPDE	Spatial correlation of intercept	Complaint Document (COGCC 2017a)
Time	Random effect	3 month time period of complaint	Complaint Document
Management Attributes			
Form 2A Exists	T/F	Form 2A on file	COGCC Well Info
BMPS on site	Count	Sentences of VMPS adopted in Form 2/2As	Form 2A/2
Engagement VMPS	T/F	VMPS with deliberation	Form 2A/2
Engagement VMPS	T/F	VMPS with engagement	Form 2A/2
Collaborative VMPS	T/F	VMPS with engagement and deliberation	Form 2A/2
Company	Random Effect	Company operating location	Form 2A/2

Following Gelman et al's recommendation to use the Widely Accepted Information Criterion (WAIC) for comparison of models, I include statistical covariates in the model that

improve model fit or reduce the WAIC score (Gelman, Hwang, and Vehtari 2014). Because there is a large list of potential covariates, I select covariates by comparing the WAIC in a model with only that variable to an intercept only model— fitting a model one time for each covariate and comparing it back to a model that assumes a random intercept based on the spatial location of the well. The logged difference between the WAIC of the restricted model and each additional covariate is presented in Figure 3. I keep only those variables which improve model fit, or the ones which show up with orange means in Figure 3.

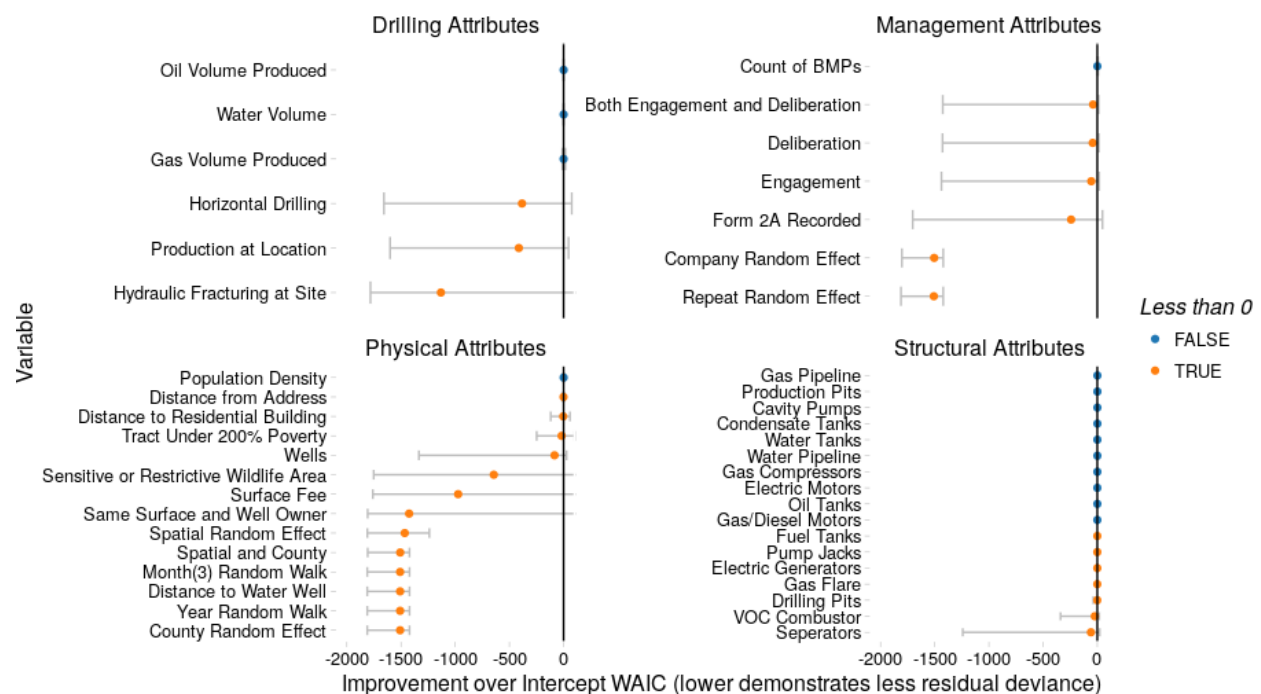


Figure 3: Comparing WAIC of intercept model to WAIC of model containing each variable alone. Notably, some of these variables are not associated with a statistically significant improvement in model fit. However, any one variable is unlikely to provide a strong explanation of a complaint occurrence and thus for model fitting I use the mean improvement as a guideline.

Method of Analysis

To test the proposed hypotheses, I fit three models. First, I test the hypothesis that the engagement, deliberation and those possessing both engagement and deliberation VMPs, which I describe as “collaborative”, alter the odds of observing a complaint (Full Model). I then test two sub-models. First, I test a model where only case and control well locations corresponding to complaints with no official reported violation are included (No Notice Model). Then, I test a model where only case and control well locations with official violations are included (Notice Model). Each of the notice and no notice models thus utilizes a separate population of case-control matches because only controls for the case wells are included. The full model includes all of the case-control matches from the Notice and No Notice models.

RESULTS

Most complaints do not lead to NOAVs and accordingly, the full model results are similar in direction and magnitude to the non-violation complaints. Violation-related complaints have larger confidence and less-stable posterior distributions because only 415 of the complaints in the database are associated with a violation. Thus, the violation-related complaints model has an n of 1660 (4×415) compared to 8304 for the non-notice model, there are many fewer observations and thus much more uncertainty about the distributions. As a result, in interpreting the results, I focus on the full and non-notice models.

Engagement and Deliberation

Since the supervised coding procedure identified engagement and deliberation separately, but engagement should theoretically be a necessary condition for deliberation, I provide credible intervals for engagement alone, deliberation alone, and the requirement that deliberation and engagement both be adopted (Figure 4). Each of these results in Figure 4 is from a different model with the above described “collaborative” VMPs being equivalent to VMPs that utilize both engagement and deliberation.

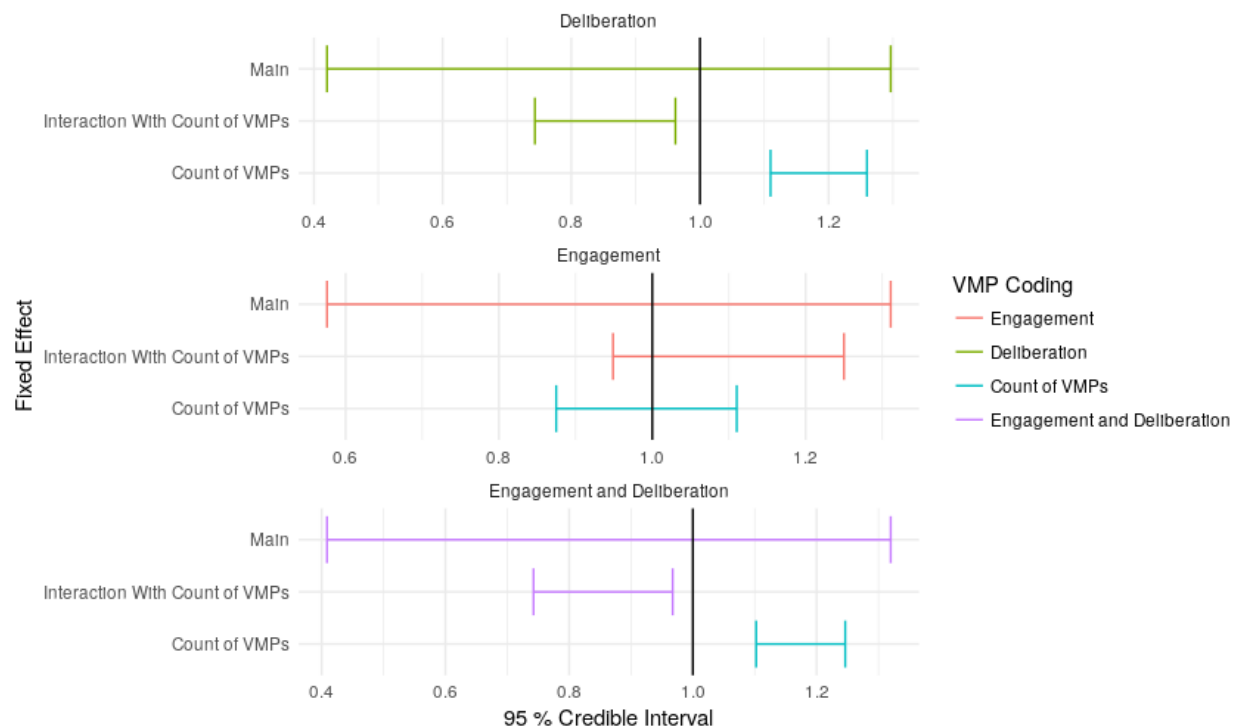


Figure 4: Fixed effect credible intervals for deliberation, engagement, and the interactions of deliberations and engagement with the count of VMPs at a site.

Notably, in all three cases the main effect of deliberation, engagement, and the combined effect of the two variables is not significantly different from one, indicating such practices alone

are not associated with a change in the odds of a citizen filing a complaint about that location. However when companies adopt either deliberation or engagement+deliberation, the interaction between the VMP and the total count of VMPs is significant, while the total count of VMPs themselves are associated with higher complaint odds. Engagement and count of VMPs are strongly correlated (Spearman's $\rho=.52$), while engagement and deliberation together present a lower correlation. This may contribute to the significant finding for cases where deliberation is coded as a follow-on to engagement. Since both processes are necessary for the full benefit of public participation, I ultimately use the combined effect of engagement and deliberation in the rest of the modeling. Since each variable is categorically coded as presence or non-presence of a practice these variables interact to form a simple zero/one categorical variable. In the rest of the paper, the model results from the Full Model, No Notice, or Notice Model are presented alongside each other with only the combination of engagement and deliberation included.

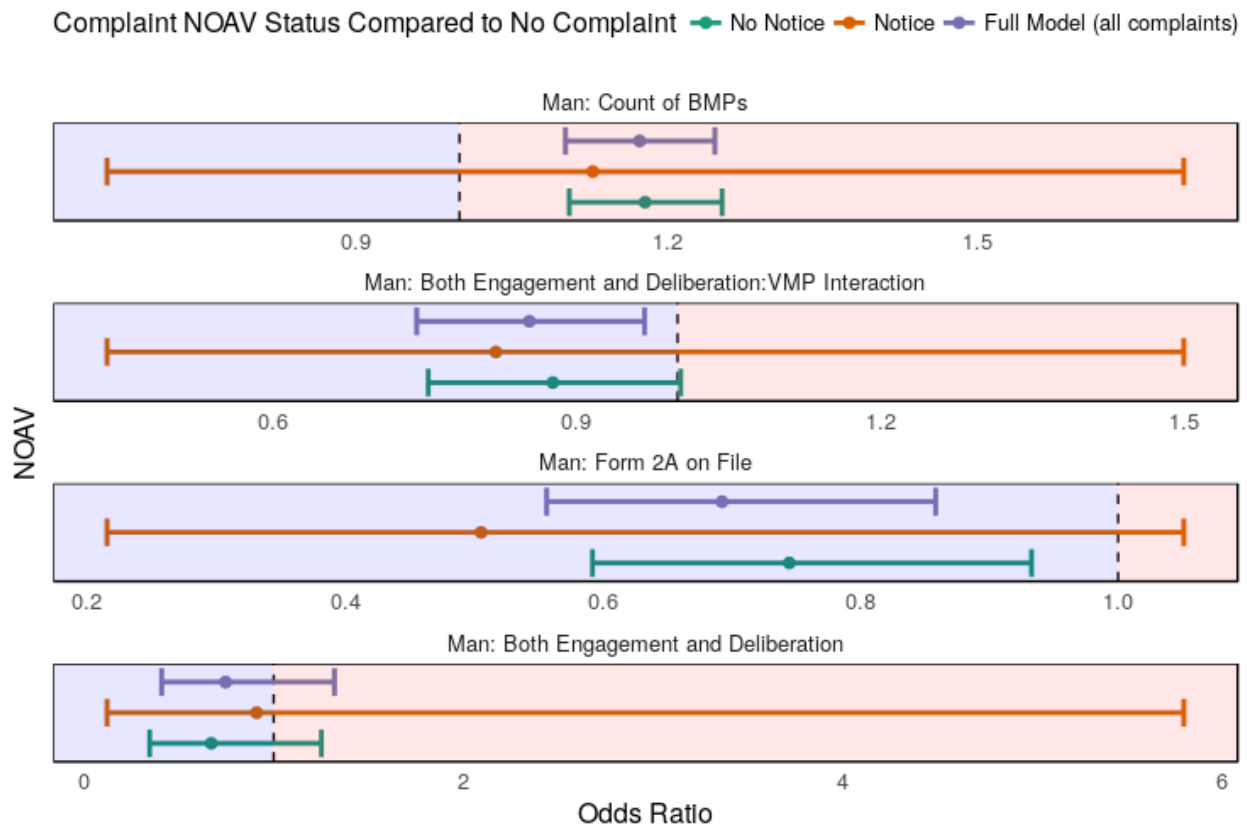


Figure 5: Management related 95% credible intervals for the Full, Notice, and No Notice Models.

Management related variables for the Notice and No Notice models indicate that a combination of engagement and deliberation is not associated with a statistically significant change in the odds of observing either complaints that have physical violations or those that do not. In each model the mean association is negative (Figure 5). However, by interacting adoption of other VMPs with engagement and deliberation, it becomes evident that engagement and deliberation weaken the modeled positive association between VMP counts and complaints. While apparently counterintuitive, VMPs were included as a partial proxy for the likelihood of firms to adopt any kind of voluntary practices. Thus, more VMPs may reflect increased in the pressure to adopt any VMP including engagement and deliberation at those locations.

Covariates

For the other management related variables included in Figure 5, Form 2A submissions were associated with lower odds of a complaint compared to wells where no Form 2A was on file (pre-2009, Federal, or Indian Wells— new wells could be drilled at some of these sites without re-entering the location assessment process).

Among location specific covariates, the presence of drilling pits is associated with a statistically lower odds of registering a complaints in both the Full and No-Notice models (Figure 6). Drilling pits or reserve pits are increasingly obsolete but are a method of separating out waste sludge for treatment (Jones and Pejchar 2013). They are likely more common at older sites where drilling is well established or environmental impacts mitigated by installing a closed loop system are not a major concern (Ramirez 2009; Shiver 1984; Kuwayama et al. 2015). Water pipelines are associated with higher odds of observing a complaint.

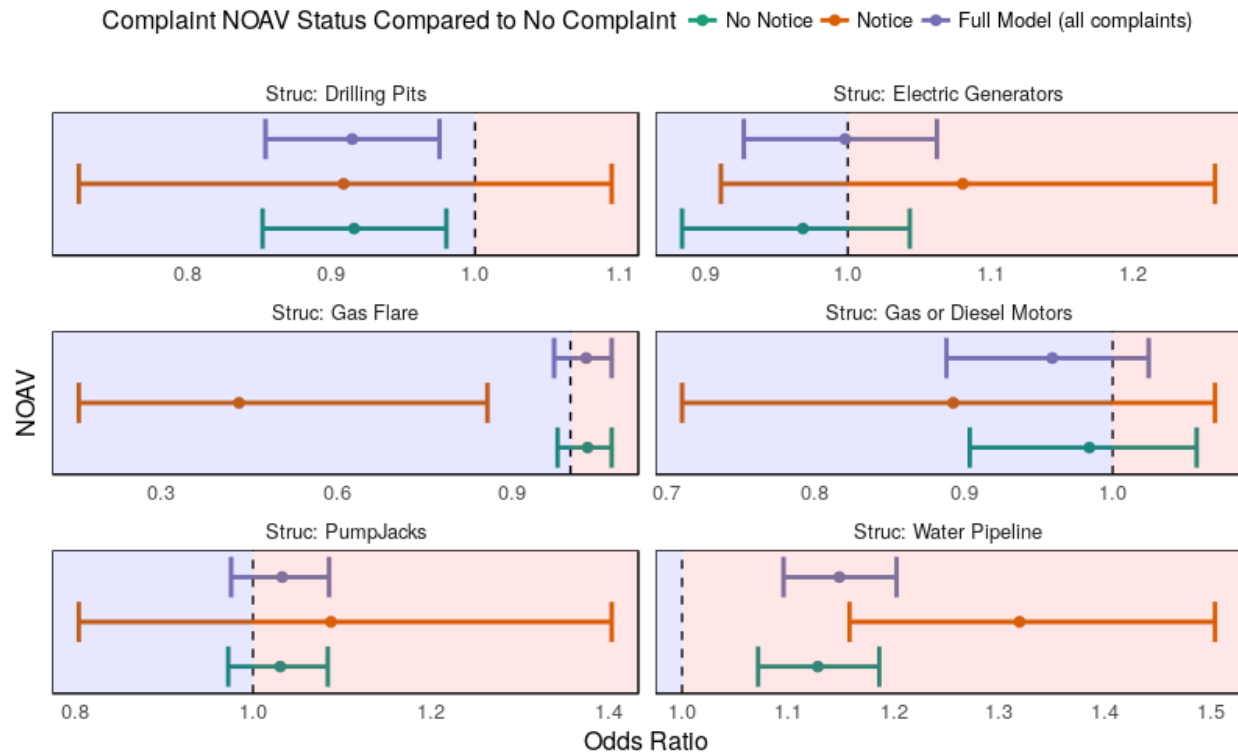


Figure 6: Well location structural attributes and associated changes in the odds of observing a complaint. Only the presence of water pipelines and drilling pits are associated with observing statistically significant differences in complaint odds.

In terms of the major techniques employed (Figure 7), I find that production at a well site as well as horizontal drilling practices are associated with higher odds of a complaint. However, hydraulic fracturing is associated with lower odds of observing a complaint controlling for other variables.

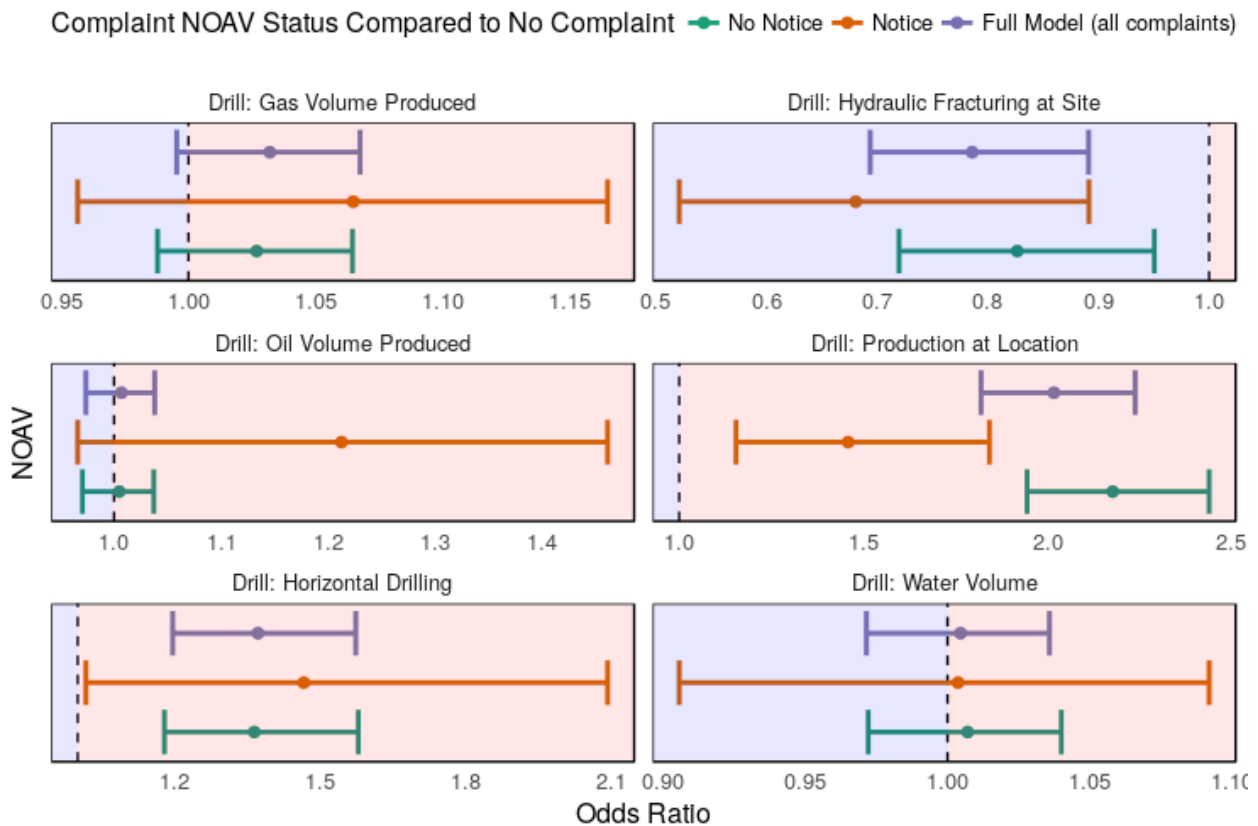


Figure 7: 95% credible intervals for drilling-related variables. Complaints are associated with horizontal drilling and well production but inversely related to the use of hydraulic fracturing techniques.

Among other structural and community attributes of well sites, none of sensitive wildlife or restricted wildlife land use controls, population density, or tract poverty had a significant association with changes in the odds of a complaint. Locations further from water wells have lower odds of being complained about across all three models (Figure 8). Proximity to water possesses a significant association that proximity to residential buildings does not, and while the two variables are correlated ($r=0.13$), distance to nearby residences is also correlated with population density ($r=-0.15$), and thus the effect of being near to people may be partially captured by those variables. Fee ownership of surface rights is also associated with lower odds of

observing a complaint at a well location—payments for drilling are have previously been tied to altering perceptions of oil and gas development (Brasier et al. 2013).



Figure 8: Physical attributes of well. At the 95% credible interval level, observations further from a water well and where landowners are paid for drilling are associated with lower odds of a complaint.

In the above interpretations, the coefficients for the Violation model are generally ignored while the interpretations of the Full Model and the No Violation model are interpreted. However, it should be noted that across the models, the effects associated with the NOAV model and non-NOAV model differ with regards to precision of the estimates, and in a few cases, the variables that are statistically associated with a change. For example, well flaring is significantly associated with lower odds of a NOAV-tied complaint (Figure 6), a finding which likely results

from the fact that flaring is a legal activity that causes concern for local residents but is not actually a violation (R. P. Scott 2017b).

For the management related variables including use of VMPs, further investigation into this finding reveals that among the over 2500 complaints in this sample, there are only five cases where both engagement and deliberation are present and a NOAV was filed by the State oil and gas agency. In comparison, there are 34 cases of companies adopting engagement and deliberation, a complaint being filed, and no NOAV resulting. Thus, while there are enough non-NOAV cases to provide a precise estimate of how deliberation may impact these cases, there is not enough statistical power to elucidate a relationship between engagement, deliberation and violation occurrence (Figure 8). An implication of this finding may be that deliberation and engagement rarely occur where NOAVS are filed.

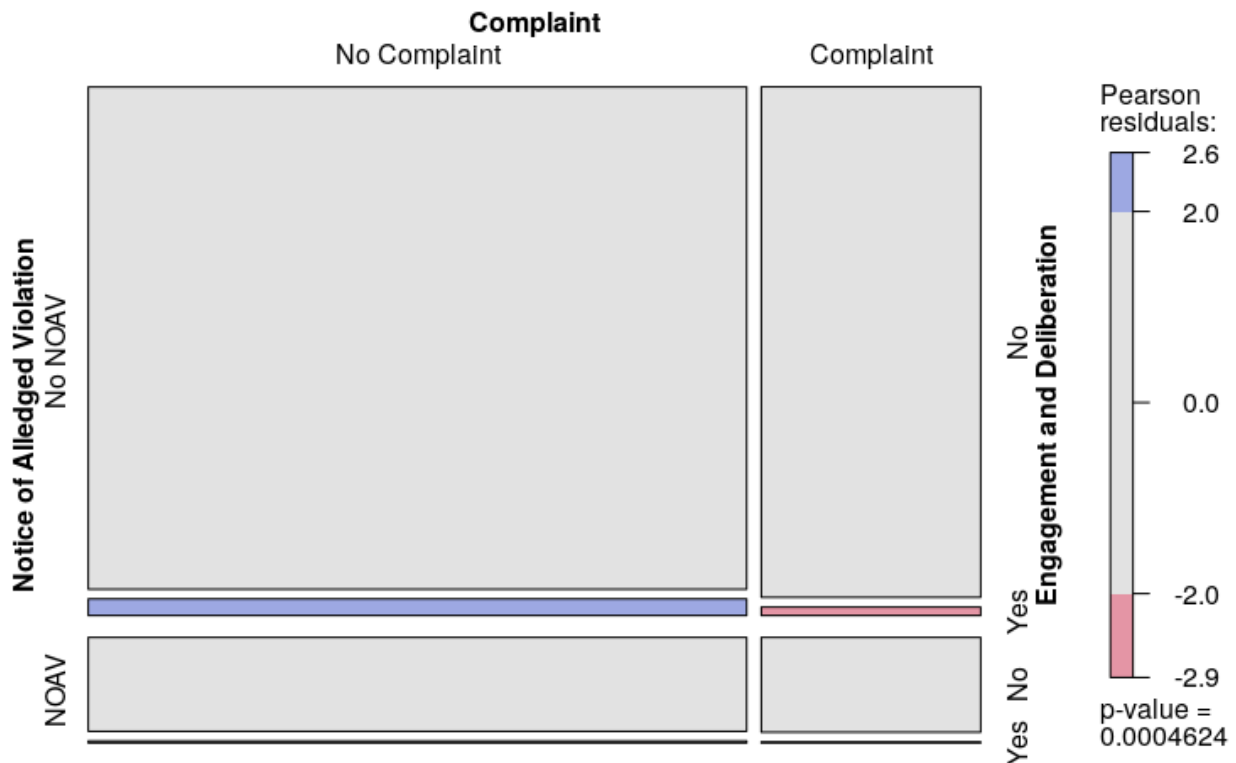


Figure 8: Comparing counts of complaints across locations where Engagement and Deliberation VMPs are used, whether a complaint occurred, and whether a violation was identified. The key takeaway is there are very few cases where NOAVs and engagement and deliberation co-occur.

Companies, Counties, and Repeat Complainants

While I included random effects for companies, counties and complainants in the model, information on counties and or complainants provided little added precision to the model for any specific counties or any specific complainants; however, for a subset of the companies included in the model, the fitted random effect estimates were significantly different than zero (Figure 9, panel A). Notable on the list are Kerr-McGee and BP, both of whom have large scale environmental damage lawsuits to their names. The statistically worst performing company, Red Mesa Holdings, went bankrupt in 2015, though many of its wells were subsequently closed for

health and safety violations.⁴ Companies with more wells, in general, tend to have lower odds of complaints (Figure 9, panel B).

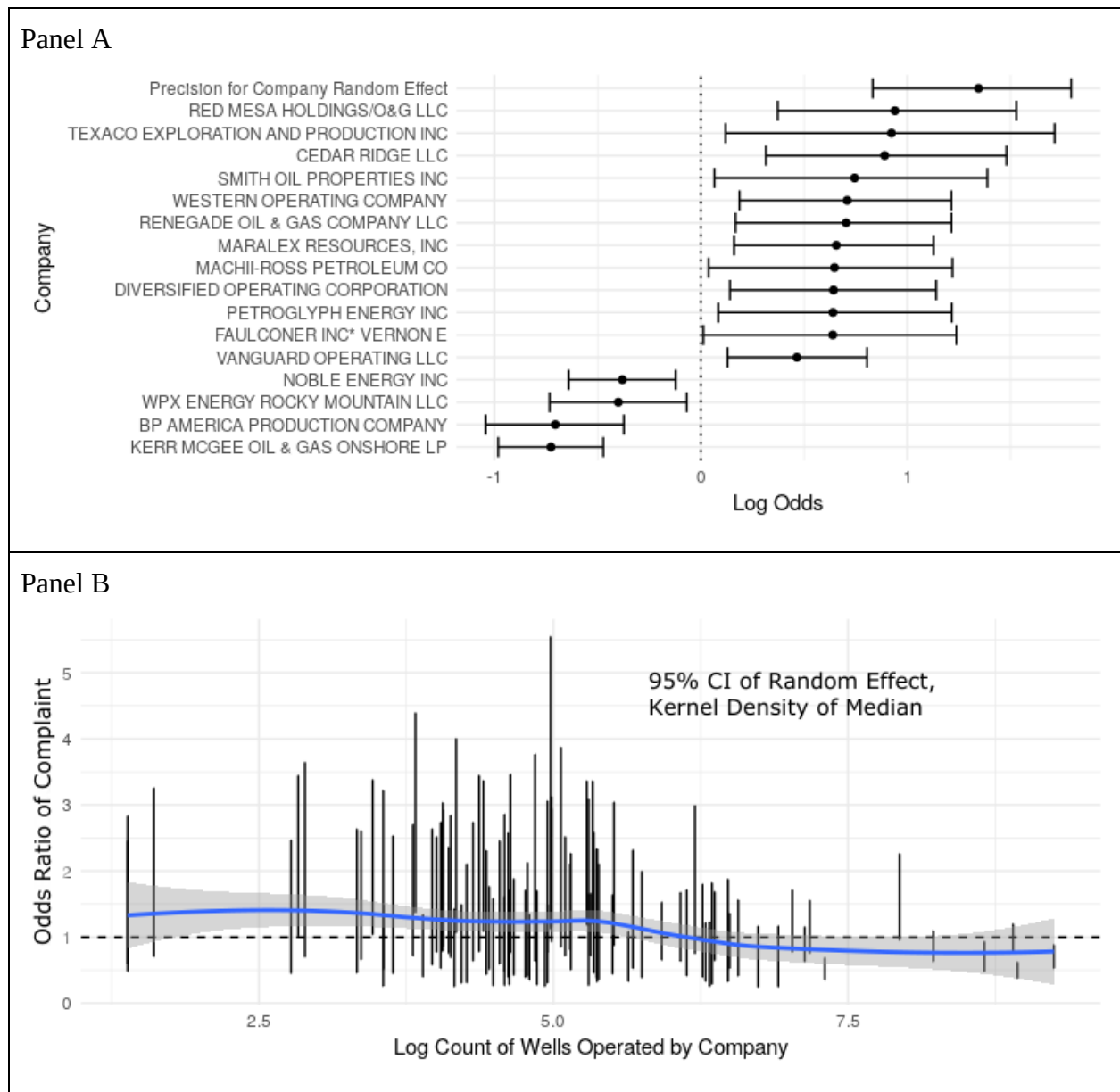


Figure 9: Panel A: Company random effect credible intervals— few companies had credible intervals different from average with 95% credibility. Some of the best performing companies have the worst historical environmental records. Worse performing companies in terms of

⁴ Noble Energy's primary US operations are in Colorado. The companies with significantly higher odds of complaints include many smaller companies— even Texaco Exploration is a subsidiary of larger Texaco

complaints have fewer wells in Colorado, on average based on a kernel density estimate of the trend between well counts for firms and complaint odds for firms (Panel B).

DISCUSSION

This research began with the hypothesis that engagement and deliberation could improve management of unconventional oil and gas as measured by citizen complaints— a measure that captures elements of citizen perceptions, behavioral responses, and also environmental harms. However, based on the analysis, there is little evidence to suggest that engagement and deliberation alone lead to changes in complaint outcomes either in the case of complaints tied to violations or for those that are not tied to violations. While the mean estimate for the posterior indicates engagement and deliberation were associated with lower odds of complaints, the uncertainty around the posterior estimates prevents a clear conclusion as to the directionality of any potential effect.

This, importantly, does not mean that combined efforts at engagement and deliberation had no overall effect. At wells where more non-engagement VMPs were adopted, complaints were more likely, but the presence of engagement and deliberation significantly reduced the predicted effect size based on the data observed. Since companies may be more likely to adopt more VMPs where they face public or coercive pressure to do so (R. P. Scott 2017c), a key finding here is that while in isolation engagement and deliberation are not associated with reductions in complaints, where many VMPs are adopted, the data here predict there will also be relatively reduced complaint behavior if they also adopt engagement and deliberation. This finding did not differ across the models that required complaints to either have a NOAV or non-NOAV, which challenges the notion that engaging or deliberating may lead to more or less violation related complaints relative to non violation related complaints.

During model fitting I only included variables that improved model fit. Still, the model did a relatively poor job of predicting where complaints would occur. One of the challenges of regulating oil and gas is that failures are often random. Well casings, for example, fail randomly at a rate of 3-4% (Vidic et al. 2013). On top of randomness in adverse event occurrence, a complaint requires a citizen being aware of an incident, that incident being worthy of a violation, and the complainant be willing to take the behavioral step of filing a complaint (R. P. Scott 2017a). This requires individuals to perceive of a threat and register it as a risk to themselves, the environment, their property or their community (Lindell et al. 2016). Given random failures, and technical complexity, this may be a difficult task for residents.

Complaints are at once possible behavioral response to a threat and an action taken to engage government. This has two implications. First, by grouping complaints together into a broad category of complaints, I have likely ignored much of the underlying heterogeneity in complaints (Dong et al. 2011; Huang and Miller 2006). Second, because complaints themselves are a method of engaging with public, may be more likely to complain in areas where complaints are effectively addressed, and less likely to complain even if there are issues in areas where complaints are not addressed (R. P. Scott 2017b). This could potentially be evaluated in future research by investigating the frequency of repeat complaint behavior relative to firm practice.

However, despite these findings, there remain strong theoretical reasons to suggest engagement and deliberation should matter for complaint behavior as engagement has the potential to increase acceptance of risk, promote shared understandings, and produce deliberations (R. P. Scott 2017a). The fact that they do not in this paper could be due to the design of the VMP forum, the voluntary nature of adoption, or the potential for firms to adopt

VMPs that provide an illusion of engagement to satisfy the public without promoting a real possibility of collaboration (Arnstein 1969). This would result in companies adopting these practices voluntarily via the VMP program without the adoption of these practices altering outcomes in any measureable way.

Who selects voluntary practices

Based on the random effect estimates for companies above, it also is somewhat clear that larger companies with better resources are the least likely to have complaints filed against them and yet they also are among the most likely to adopt engagement and deliberation as practices. This is borne out by looking at descriptive statistics for variables included in the above models. Companies with more wells and a lower ratio of violations to wells are the most likely to adopt collaborative management practices—collaboration may or may not play a role in this relationship (Figure 10, Panel A). Moreover, the number of complaints per well in the dataset is related to the number of violations per well. Companies in this dataset who adopted engagement and deliberation generally also performed better than average on both of these metrics (Figure 10, Panel B).

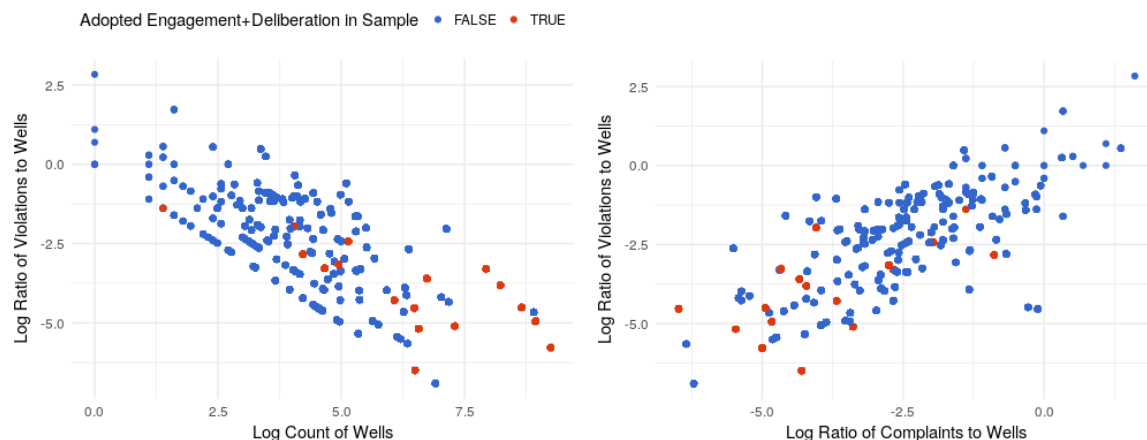


Figure 10: Panel A: Within this dataset, firms with more wells have fewer violations per well. Engagement and deliberation are then mostly adopted by companies who have many wells and who already achieve a low count of violations per well. Panel B: There is a strong statistical relationship between the ratio of complaints to wells and the ratio of violations to wells, with engagement and deliberative practices generally adopted by companies with low rates in both.

As a result, companies adopting engagement and deliberation are relatively few and limited to the largest actors. Correspondingly, these firms are also the least likely to violate official regulations or have adverse events already based on event frequency data.

It is also possible that the null-finding in regards to the main effect of engagement and deliberation improving policy outcomes may result from lack of precision in the automated coding. Deliberation and engagement were coded for their mere presence, not any of the underlying dynamics that would be related to changes in policy making processes or outcomes. Furthermore I do not observe whether companies follow through and principally engage in practice (Emerson and Nabatchi 2015a).

The voluntariness of VMPs is a final potentially critical element in these results. Past work on voluntary regulation has emphasized that paradoxically enforcement is necessary in order for voluntary programs to work, otherwise they may work as signals of green or pro-environmental behavior while possessing no practical substance (Potoski and Prakash 2009). While companies are required to uphold the VMPs they adopt, this does not mean residents actually attend meetings or that the engagement happened in a reasoned, well-intentioned manner.

CONCLUSION

The results here present findings from one study of use of engagement via VMP

programs. Despite engagement and deliberation not being associated with changes in complaint odds taken alone, elements of this paper do suggest such practices may be somewhat effective. First and foremost, higher counts of general VMPs are associated with lower complaint odds. However, where engagement and deliberation are adopted as VMPs the modeled effect of VMPs on complaint odds is weaker, indicating a decreased association between VMPs and more complaints. While it may at first seem adoption of VMPs should, in practice, reduce complaint behavior and the opposite and seemingly counterintuitive association is demonstrated here, companies may adopt VMPs more in areas where they face public or coercive pressures to do so. Future evaluation might thus attempt to build corporate motivations directly into the model of citizen complaints by incorporating firm factors and measures of case-specific pressures such as public comments or extensions to permit wait times. These data were only available for a subset of the wells studied for this paper, though they are increasingly available as new wells are drilled in Colorado.

The elements of large companies that lead to their higher rate of adopting practices should also be further evaluated— this paper has not suggested a causal explanation for this result. Within collaborative governance literature, recent attention has been paid to the roles that leadership and institutional capacity can play in shaping the structure and efficacy of collaborative governance arrangements, and one hypothesis is larger companies may have more resources available for both adopting engagement and mitigating complaints (Ulibarri 2015; Ulibarri and Scott 2017). If resources remain a barrier to smaller firms adopting such practices, Colorado and local governments could encourage adoption of VMPs by increasing capacity for positive public engagement. There is reason to believe Colorado is already doing this as

evidenced by improved feedback forums online, clarity of public comment procedures, and improvements to local government liaison programs which are meant to help companies connect with local governments and then with citizens (COGCC 2017a). As such practices age, other research should evaluate if they are able to increase the rates of voluntary adoption of engagement practices, or if the investment of government resources in supporting such practices increases effectiveness in improving policy outcomes and outputs.

While engagement may not be effective as predicted in reducing complaint behavior given these data and the model developed here, this does not mean firms benefit from such practices in the long run. In fact, if engagement leads to more complaints, and those complaints truly reflect negative outcomes, more complaints are beneficial as they are an indicator of where there might be shortcomings in practice, or even potentially in policy. One of the theoretical rationales for VMP forums is that firms can learn what practices work and adopt new practices. Similarly, engagement with residents can help firms to learn what practices work for meeting needs of local residents. Thus, another future direction for this work is to assess if the intention to adopt collaborative VMPs in VMP forums contributes to future changes in firm practices themselves. Even if engagement did not alter citizen behavioral responses to oil and gas, the benefits of collaborative VMPs might only amass to firms. Learning what works at these sites may promote improved outcomes at later oil and gas sites, meaning firm benchmarking of practices could be enhanced via engaging and deliberating.

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2: Why Do Firms Improve Practice? Motivations For Voluntary Practice Adoption And Change In Oil And Gas Risk Management

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ABSTRACT

Voluntary management practices (VMPs) are a common policy tool for encouraging firms to adopt practices that reduce risks and externalities of industrial activities. Over time, firms are expected to improve their practices through informed decision-making and experience with past VMPs. Because VMPs are voluntary, improving practice requires first firms be motivated to adopt practices and second that each firm use information sources to benchmark and assess practices. In this paper, I evaluate how institutional motivations including economic pressure, coercive pressure, normative pressure, and uncertainty about best practices are associated with firms adopting new-to-the-firm VMPs. Specifically, I test what motivations encourage behavior change, what information sources are associated with behavior change, and how motivations may encourage use of information in promoting behavior change.

Using 8100 oil and gas permit documents from the state of Colorado, I build a multi-level spatial model to evaluate associations between motivations, information sources, and new VMP language used by firms. I measure change in VMPs by comparing newly adopted text to previously adopted text, calculating the proportion of text which is new to the firm across all sites. I further leverage text similarity methods to evaluate each institutional motivation. The results demonstrate that while institutional pressures are associated with VMP change, this relationship is complex. Specifically, coercion is associated with both higher and lower odds of complaints depending on how coercion is measured. These results suggest that while general coercive pressure is associated with higher odds of VMP change, coercive pressure to adopt oft-used practices may be associated with lower odds of change by individual firms. Additionally, increased deviance from norms is associated with higher odds of change, indicating that firms further from institutional norms have higher odds of adopting new VMPs.

Finally, the official methods of conveying impact information to firms within Colorado, with the exception of passed inspections, are not associated with new VMP language adoption. This challenges the assumption that firms leverage information from interactions, impacts, and feedback in choosing which practices to adopt. In conclusion, normative pressure and coercive pressure may be effective policy levers for motivating firm change, but policymakers should not focus solely on motivating adoption but be careful about how these institutions may enhance or detract from potential innovation.

INTRODUCTION

Environmental and community risks of oil and gas resources are challenging to manage because they present an issue of a vast number of sites requiring regulation, diversity of requirements and types of sites, and differing environments at sites. Voluntary management practices are one method governments can use to manage risks of oil and gas development. Commonly termed “best” management practices or voluntary practices and thus referred to simply as “BMPs”, such practices can govern the planning, maintenance, environmental management, and community engagement at oil and gas sites while also informing engineering decisions and requirements (D’Arcy and Frost 2001). I use the term VMP for “voluntary management practices” to explicitly refer to use of such practices as a type of voluntary management. VMPs as policy tool are minimally coercive— allowing firms to select the practices most feasible for them based on available information and knowledge which allows flexibility resulting in the achievement of environmental goals at minimal cost (Strassler, Pritts, and Strellec 1999). In selecting site-specific VMPs, governments expect firms to consider the environmental, structural, and economic nature of individual sites, selecting appropriate procedures that meet site-specific requirements (Szulanski 1996). The flexibility allowed by using VMPs as a policy tool can aid in fostering environmental and management innovations as firms get to try new practices to meet specific needs (Rennings 2000; Lin and Prakash 2014). VMPs practices thus become not just those that work, but are most improved, leading to constant improvement of firm practices at sites. This requires firms utilize evidence about what has worked, is working, or may work to prevent adverse impacts (US EPA Office of Water 1993).

Can firms learn to adopt improved practices, and if so what might motivate them to do

so? Practically speaking firms face numerous challenges to their ability to adaptively learn to adopt improving practices. Lack of empirical studies of practice effectiveness and causal ambiguity as far as tying practices to outcomes challenges the possibility that firms can adaptively, knowingly, and innovatively adopt improved practices over time (Szulanski 1996). Even if firms can navigate complexities of causal pathways and learn what works, they must be motivated to do so. While competitive pressures may drive some VMP adoption (Rivera and De Leon 2004), voluntary practices may also be promoted by institutional motivations including normative pressures, coercive pressures, and uncertainty about which options to pursue (Delmas and Toffel 2004). These pressures may form informal structures that encourage firms to adopt best practices, leverage information in decision making (Harrison 1998), and slowly improve practices (Bogan 1994).

My research questions are threefold: R1: What institutional motivations foster adoption of new voluntary management practices? R2: Does provision of agency-provided information and feedback sources contribute to the adoption of new best management practices?” and R3: Do institutional motivations for practice adoption and information provision interact to produce differing VMP adoption, learning, or innovation outcomes? Specifically, I test the hypotheses that economic pressure, coercive pressure, normative pressure, and uncertainty enhance the translation of public complaints, violations, passed inspections, and spill information into changes in firm-level management practice changes.

Via use of a census of oil and gas wells from the State of Colorado, I evaluate changes in VMPs adopted by individual firms between 2009 and 2015 by assessing text similarity (Mihalcea, Corley, and Strapparava 2006; Corley and Mihalcea 2005). I then control for spatial

proximity of wells, company-level characteristics, and lagged time variant characteristics to evaluate how legitimacy, coercive pressures, and normative pressures interact with public complaints in one time period produce changes in VMPs used by a specific company in the next time period. Because I model VMP change using a binomial response variable, I test multiple parameterizations of change to gain an understanding of how sensitive the model is to assumptions about what constitutes change and thus new VMPs.

THEORETICAL RATIONALE

While best practices may be adopted by any firm at any time, for this paper, VMPs are a specific policy tool available to regulatory agencies. While voluntary programs often exist as unilateral accords outside of the provision of government, they can be adopted as a tool of governance in two general frames, either as a negotiated environmental agreement, where corporations voluntarily self-regulate or forgo operational freedom in a negotiation with government, or through public voluntary agreements where a public program is created in order to transfer either subsidies or reputational benefits to corporations in exchange for environmental concession (May 2005; Salamon 2002). Voluntary management practices fall under the first category of negotiated environmental agreements, as official VMP policies commonly establish a forum for individual bilateral agreements where firms contractually agree to comply with named practices.

The voluntariness of VMPs is defined as the lack of “formalized coercive power” by a regulator to mandate their uptake (Lyon and Maxwell 2007, 723–750; Potoski and Prakash 2009). While coercion may still be present, there is no mandate in law. Like other voluntary governance programs, governments utilize VMPs because of their flexibility for firms and

potential to create beneficial outcomes without the political challenges created by top-down regulation (Carmin, Darnall, and Mil-Homens 2003).

In practice, VMPs require four key elements to improve policy outcomes. First of all, adoption of a VMP by an individual firm requires that the firm be motivated to adopt that VMP (Delmas and Toffel 2004). Second, a firm must be able to identify best management practices through some sort of informational forum, knowledge sharing, or educational relationship with an entity possessing best practice knowledge or through benchmarking against other firms (Bogan 1994). Third, given that a firm has the motivation to adopt a VMP and has a method of identifying relevant VMPs, the firm must then select an appropriate VMP for the context (Measham, Kelly, and Smith 2007; D’Arcy and Frost 2001). If all of these intermediate outcomes occur, then a firm must still adhere to the VMP. None of these steps are foregone conclusions, and each speaks to a critical need to better understand the process of VMP adoption, and the role that information, learning, feedback, and monitoring can play in shaping the effect and use of VMPs.

Firm Motivations for VMP Adoption

The first research question this paper addresses is *what motives drive firms to adopt new voluntary management practices (R1)*? This question is commonly researched within the study of voluntary environmental governance (DeLeon and Rivera 2010; Koehler 2007; Khanna et al. 2007; Potoski and Prakash 2009; Maxwell, Lyon, and Hackett 2000; Baumgart-Getz, Prokopy, and Floress 2012). Firms are conglomerations of individuals that operate by evaluating competitor behavior, estimating demand, estimating costs, and thus choosing a path forward (Cyert and March 1963). While individual managers may hold sway over firm choice of

practices actions that go beyond regulatory requirement and firm interest towards achieving social good, such as Corporate Social Responsibility (CSR) (McWilliams and Siegel 2001), the willingness of the entire firm to adopt those practices can generally be explained by profit maximizing behavior or institutional pressures (Delmas and Toffel 2004).

Firms operate within a field or subfield where competition between firms encourages efficient performance in order to maximize profits. Competitive pressures within fields can push firms to adopt practices that reduce costs, improve efficiency in planning, permitting and decision making, or maximize outputs (Rivera 2002; Porter and der Linde 1995). Under a pure rational choice perspective, this should drive firms to adopt practices that maximize the production efficiency over the long run (though not necessarily over the short run). However, firms within an organizational field, or a “recognized area of institutional life” operate under considerable uncertainty and are subject to institutional pressures that constrain behavior (DiMaggio and Powell 1983). The organizational field structures the nature of firm decision making— firms do not operate alone but in response to regulators, consumers, and other firms. While DiMaggio and Powell (1983) focus on institutional pressures as mechanisms that drive isomorphism or likeness of organizations within a field, the pressures that drive isomorphism are also one framework for classification of firm voluntary behavior (Delmas and Toffel 2004).

Coercive pressure is the “formal and informal pressures exerted on organizations by other organizations on which they are dependent and by cultural expectations in the society in which organizations function” (DiMaggio and Powell 1983, 150). Traditional top-down environmental regulation exerts coercive pressure on firms by requiring action or levying fines or punishment. Public disclosure laws ideally accomplish environmental benefits through cultural

expectations— not the existence of any formalized power. The fact that coercion can be formal or informal is central to the function of voluntary governance and VMPs because the lack of formal coerciveness does not exclude informal coercive power. Instead, firms often must operate under the threat of uncertainty of future coercion or societal expectations that they behave a certain way which are not ensconced in law.

Uncertainty in and of itself may also be a pressure driving firm decision to select voluntary VMPs. It is critical to mention here that firms face multiple sources of uncertainty— firms practicing in new basins may be uncertain about what practices are best there (Lilien and Pastena 1982), firms may be uncertain about regulatory environments and may adjust timelines or adoption patterns in response to impending regulatory actions, or they may take actions to reduce uncertainties by integrating themselves into local government and regulatory processes (Engau and Hoffmann 2009). One response to such uncertainty might be a *mimetic process* where firms adopt the practice of other firms as a method of addressing ambiguous or unclear problems (DiMaggio and Powell 1983). What DiMaggio and Powell term modeling is a decision method whereby firms adopt practices of another firm as a heuristic under conditions of institutional, regulatory, or environmental uncertainties.

Finally, normative pressure can result in changes to firm practices due to professionalization of the field (DiMaggio and Powell 1983). Field specific practices such as sharing of common employees, licensing and certification procedures, and the sharing of information through professional organizations result in institutional norms that define firm and individual membership. As a result, firms' interest in legitimacy means normative pressures can motivate firms to adopt voluntary practices if those practices signal membership or

professionalization within a field (Potoski and Prakash 2009).

Firm Choice of VMPs, Learning, and Innovation

Institutional and economic pressures are not sufficient to ensure that environmental outcomes or efficiency improve; the theory of increasing returns provides evidence that satisficing is an expected outcome of organizational behavior (Paul Pierson 2004). While economic and institutional pressures should structure not only the willingness of firms to enter into VMP policies, the key elements of design encouraging improvements within VMP forums are exhortation and mutual assistance (Harrison 1998; Koski and May 2006). VMP forums function under the assumption that firms generally share a desire to limit environmental and social harms via one of the above motivations (Harrison 1998), the discussion of possible VMPs with firms as part of the permitting process (exhortation), or communicating about possible practices (mutual assistance), is intended to overcome barriers to improved practices (Koski and May 2006).

VMP programs are will be most effective when they promote learning and adaptation on the part of firms towards adopting new beneficial practices— taking full advantage of the flexibility of VMP policies and firm ability to innovate (Bogan 1994). With a proper-functioning VMP system, the communicating of practices to firms, relaying of practices between firms, and experimentation and feedback on the success of options may lead to innovation and better practices (Porter and der Linde 1995; Lim and Prakash 2014). Indeed, there is some evidence that voluntary practice programs may encourage application of technical, firm-specific knowledge entering into the governance process thus promoting dynamic regulation (Khanna et al. 2007; Bauer, Blum, and Bohlin 1992; Lim and Prakash 2014). However, the transfer of

exhortation or assistance into true better practices, regardless of motivation, relies on firms learning what practices should be adopted either to satisfy regulators, meet industry norms, reduce uncertainty at well sites, or reduce harms. Successful dynamic regulation requires firms to adopt the innovative practices of other locations, firms, or domains (Hargadon 2002). Hence a functioning VMP policy requires that firms learn. Doubtlessly, learning and innovation usually go hand-in-hand, one encouraging the other (Hargadon 2002), but it is the author's opinion that considering organizational learning could provide new insights and understanding of voluntary practice forums as policy.

Learning, at its most basic level, is the acquisition of knowledge that is recognized as useful to a firm or one of its subparts (Huber 1991). The knowledge need not be new to the domain or firm to be learned, whereas, innovation may be taken to be the generation of new practices within or between firms (Wolfe 1994; Kanter 1988; Hargadon 2002). Because management practice forums emphasize the potential for not only knowledge transfer and recognition within firms, but also between firms and regulatory agencies, I classify learning within a VMP forum as a form of collective learning. Heikkila and Gerlak define collective learning as,

“a collective process, which may include acquiring information through diverse actions (e.g. trial and error), assessing or translating information, and disseminating knowledge or opportunities across individuals in a collective, and 2) collective products that emerge from the process, such as new shared ideas, strategies, rules, or policies” (Gerlak and Heikkila 2011, 5).

Defined as such, learning is characterized by both process and products. As processes, learning operates via the acquisition, translation and dissemination of knowledge. These then can produce outcomes of belief change and then potentially behavior change (Heikkila and Gerlak

2013). While learning first occurs at the individual level and then is transferred within and across groups, information can be acquired via a number of actions— this may include experience, deliberation or discussion, or active search. Many voluntary policies operate under the assumption that firms will use feedback to benchmark practices (Bogan 1994) and while regulatory agencies cannot control all aspects of firm knowledge acquisition that may lead to VMP adoption, they have the potential to provide feedback to firms. In essence, implementation of the exhortative and mutual assistance elements of VMP forums requires some element of dialogue in regards to not only practices but also outcomes. *In a functioning VMP system, firm choice of VMPs should respond to evidence about what VMPs are improving outcomes (H2).*

While an agency may directly discuss VMPs with firms, it also may provide information on what environmental harms are occurring, what processes or practices are leading to community dissatisfaction, or what firm practices are in violation of officially established regulations— thus varying the method of knowledge acquisition and placing different demands on the firm to translate such knowledge into new practices. As institutional factors and motivations shape the likelihood of firms adopting VMPS, institutional factors may also change how firms acquire and translate information. Agencies can help to provide information to firms, shaping a firm’s understanding of its technical domain (Heikkila and Gerlak 2013). Thus, the second research question for this paper is, *how does learning from agency-provided information and other feedback sources contribute to the adoption of new management practices (R2)?* I focus on four sets of information sources in particular. First, firms can learn-by-doing— events that occur at sites should provide evidence about what kinds of practices work. Second, firms can learn from negative feedback from agencies about what is not working. Alternatively, agencies

can provide positive reinforcement on the kind of practices that are effective by recognizing firm success. Finally, citizens can provide feedback to firms about where practices have failed to help mitigate impacts. Each of these provides a potential information source for evaluating currently adopted practices in the field.

Interactions of Motivations, Learning and Innovation

In addressing this second research question the first research question— what motivates firms to adopt VMPS—remains relevant, as motivations for adoption may or not motivate learning about what policies work. It is possible that institutional motivations can foster learning and then application of that knowledge (adoption) as firms take on knowledge that is potentially useful to the firm (Huber 1991). How motivations for adopting VMPs are connected to knowledge acquisition processes is a critical question from a program design perspective as creating programs that promote adoption without learning may not achieve the optimal benefits of a voluntary practice program.

This leads to the third research question which builds on the first two: *Do institutional motivations for management practice adoption enhance the use of information sources in shaping firm VMP selection (R3)?* While the same motivations may foster VMP adoption, innovation and learning about VMPS, and application of knowledge into VMP adoption, it is theoretically plausible that some motivations may enhance the application of knowledge to practice, or that only certain motivations may allow this translation. In this case, these motivations should be ones that should be targeted in future VMP program design and implementation. I operate under the neutral hypothesis that *each motivation under study has the potential to increase the translation of knowledge into VMP change.*

In summary, this paper tests how each institutional motivation introduced— economic pressure, normative pressure, coercive pressure, and uncertainty— drive firm changes to best management practices at specific well-sites. This advances the understanding of motivations for VMP adoption by including investigation of learning in firms and organizations. Specifically, I test the often held assumption that certain motivations enhance the ability of firms to learn from agency-provided feedback. This research is critical not only for understanding of the motivations behind voluntary environmental action on the part of firms, but also for designing governance systems that encourage firm response without traditional command-and-control regulations, including systems that enhance the ability of firms to learn from agency-provided feedback.

METHODOLOGY

Case Selection and Approach

For my case I utilize a census of oil and gas locations from the state of Colorado. I leverage a publically accessible VMP data in consort with the event data described above to evaluate what motivates firms to adopt VMPs and evaluate firm learning from feedback across sites. Like water quality management, oil and gas development faces the challenge of differing types and scales of potential risks within a given basin. A single oil and gas basin may have thousands of individual well locations (point sources), which are then associated with a variety of infrastructure including trucks, pipes, roads, storage reservoirs, and horizontal wells, which make risks of development diverse across locations. This makes VMPs a popular tool for managing risks as firms can adopt practices that fit specific sites. In the US state of Colorado, the Colorado Oil and Gas Conservation Commission (COGCC), the regulatory agency that governs

oil and gas development, maintains records of the VMPs firms agree to adopt at specific locations as part of the well permitting process. Colorado is commonly cited as a leader in environmental practices associated with oil and gas development, and thus it provides a useful case for testing whether VMPs can be effective in promoting improved environmental outcomes (Davis 2012).

For my case I utilize a census of oil and gas locations from the state of Colorado which was gathered from the COGCC website by downloading permits for all available wells. While these data were publically accessible, they were not in an accessible database and had to be systematically downloaded from the website using web scraping methods. Using a combination of Python and R, I downloaded all Form 2A permits stored on the state website. For administrative purposes, an oil and gas location serves as an organizational unit for a companies drilling in an area, and governs various elements related to drilling including traffic patterns, land use and remediation requirements, and even community engagement practices. These practices are recorded via Form 2A location assessment permit documents for oil and gas drilling on fee-based sites, and are required for non-Federal or American Indian sites.¹ Under Colorado law, firms can specify VMPs they will adhere to while managing the drilling location. While these data were publically accessible, they were not in a database format with searchable variables. To create a database, I systematically downloaded Form 2A permits from html and pdf pages stored within the COGCC web system. The resultant dataset includes those locations for which a Form 2A was filed between 2009 and 2015, including any VMPs proposed by the firm and then agreed upon by the state agency.

¹ Notably, Form 2's are still filed for these sites but administration is very different in federalized versus non federalized units and so I only include sites with a Form 2A Location Assessment. Form 2 BMPs are generally the same as Form 2A BMPs.

These records are tied to publically accessible databases of financial data, spills, fines, and citizen complaints. Together, these records provide evidence of not only when and where VMPs have been adopted but of potential motivations and information sources for firms. For example, the complaint database is designed to provide feedback to firms about citizen concerns, assist the agency in regulatory efforts, and create a forum for addressing local issues. The spills database is intended for transparency, but provides a method of recording where and when companies have experienced adverse spill events. The records of fines and warnings provide evidence of where regulatory agencies have required action of firms or punished firms for non-action.

Though I utilize a multilevel model allowing variation across locations, firms, counties, and time, for the dependent variable I focus on changes in VMP practices across firms. Firms adopt VMPs at individual well sites; however, a firm's knowledge about practices is not reflected by their behavior at one individual well site, but instead by their practices across all of their wellsites. Because there are observations within firms at different time periods with time varying covariates, I utilize a multi-level model where location specific observations are made for individual locations, but each observation reflects characteristics across the entire firm. To model change in a firm's VMPs— which constitutes the evidence of learning and is also the dependent variable in the model— I use text similarity analysis to compare all VMP text used by a firm upon submitting a permit at a well to all previously used VMP text. Thus, for any location where new text is used, there will be a change in the dependent variable observed for that firm. This change is tied to a specific location but in calculating the change information from all other previous locations is used.

Table 1: Example of textual changes and the corresponding measure of textual change. Notably, this method of constructing the dependent variable is better at capturing large changes than small changes. A change such as replacing 100 with 500 (row 3) is substantively large, but would be captured in the model as a small change. Thus, comparing amongst changes is potentially less useful than comparing when a change occurred to when a change did not occur since the text similarity methods in this analysis cannot determine what constitutes a substantively more meaningful change.

Type of Change	VMP Text (EXAMPLE ONLY)	Rows in Table for Comparison	Change in Text (1-Ratio of Matches)
Baseline	Ursa's land department contacts the landowner to get an initial approval, prior to formal Pre-application notifications to all affected stakeholders.	NA	NA
New sentence	Ursa's land department contacts the landowner to get an initial approval, prior to formal Pre-application notifications to all affected stakeholders. Once the Form 2A permitting process was initiated all surface owners and owners of building units within 1000 feet of the location were notified by letter with an invitation to meet or discuss the proposal	1	0.648
Small Textual Change	Ursa's land department contacts the landowner to get an initial approval, prior to formal Pre-application notifications to all affected stakeholders. Once the Form 2A permitting process was initiated all surface owners and owners of building units within 500 feet of the location were notified by letter with an invitation to meet or discuss the proposal	1,2	0.056
No Change	Ursa's land department contacts the landowner to get an initial approval, prior to formal Pre-application notifications to all affected stakeholders. Once the Form 2A permitting process was initiated all surface owners and owners of building units within 500 feet of the location were notified by letter with an invitation to meet or discuss the proposal	1,2,3 (includes all unique text from all previous time periods)	0

Based on the amount of change in the VMP language, I calculate a similarity score using a ratio of matches approach; a higher similarity score indicates less change (see Table 1). By differencing this value from 1, I calculate the ratio of unmatched text comparing time t to $t-1$ for a given firm as described in the dependent variable section below. Each time the firm adopts VMP language at a drilling site constitutes a new observation. Thus, each time a permit is filed by a firm and the VMP document includes a VMP I include that permit as a unique observation for that firm in time period t . This allows modeling site-specific characteristics such as local demographics or environmental conditions as well as firm-wide pressures.

This operationalization of VMP change only recognizes completely new VMP practice and does not capture potential functions of VMP forums including learning to adopt practices that have already been adopted or ceasing practices that are identified as ineffective. This, however, is intended to capture an important function of VMP forums in that they are intended to promote improved practices across all firms over time which makes within-firm innovation a necessary condition for the intended theory of policy action.

Dependent Variable

The dependent variable is a count of VMP text items in time t that are not VMP text items in time $t-1$, divided by the total number of items in time t . Notably, the change as modeled here is in terms of the language used, and as illustrated in Table 1. While change in VMPs calculated via the above method is a numeric measure for the vast majority of well locations there are no changes to the VMP language. Most changes that occur are very minor (Figure 1). In fact, only slightly more than quarter of all sites have changes to VMP language.

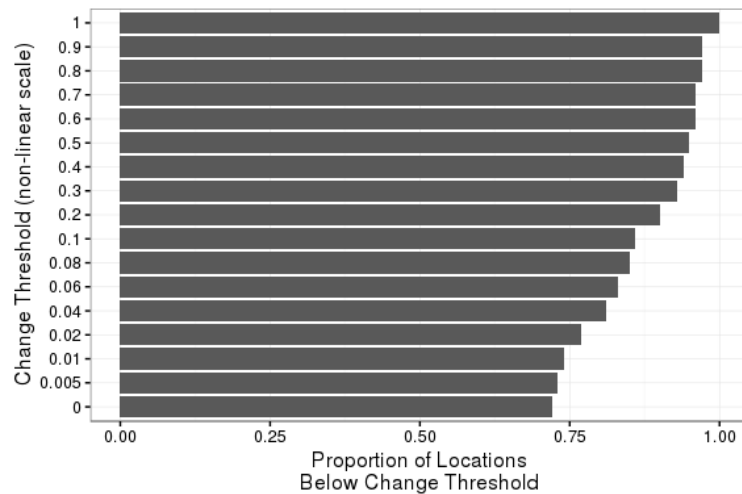


Figure 1: Change Threshold (Ratio of Matches-1), demonstrating that most locations have no change to VMPs, but there is strong variance in change across the roughly 25% of oil and gas locations that do have change in VMPs.

The prevalence of wells with a true zero value for the textual change variable indicates the response variable is far from normal, and fitting the response variable as a continuous variable may lead to overdependence on high change cases. Moreover, in terms of learning, an apparently large change may be substantively no more significant than a very small change. While completely new text may be the most clear example of firms changing practices, for a firm that has many VMPs already adopted, a small change could be substantively as critical. As a result, I study change as a binomial variable converting the continuous text measure into a variable indicating change or no change. A challenge here is that there is no specific count of characters changing at which we would assume a significant level of change occurs to be able to demonstrate learning. Small changes, such as increasing a setback, could affect relatively few characters but have a very large impact on outcomes. Likewise, and perhaps most commonly, very small changes may be due to administrative differences or specific locational attributes (such as place names). These small changes might appear to be evidence of innovation but

classifying them as a change would decrease the accuracy and precision of using text change as a measure of innovation. To isolate this noise in the change variable and test the robustness of the analysis I test various thresholds for what constitutes a change.

Specifically, I test models where a change is said to have occurred so long as the level of change is above the 71st (0 change in text), 75th, 80th, 85th, 90th, 95th, and 99th percentiles of textual change. I ultimately present results based on summarizing posterior coefficient estimates from across the 75th-95th percentile models by pooling the estimates based on a Jeffrey's prior (Jeffreys 1946) and reporting the sample mean (μ , Average of Mean Model Prediction) and prediction mean (τ , Average of Model Prediction) with credible intervals that take into account the 95 credible intervals from each of the models. Thus, the sensitivity analysis is built into the estimates provided as a meta-analytic estimate. However, since each model relies on the same data, I generally rely on credible intervals for predicted model values with the justification that this paper is essentially one prediction not a meta-analysis of multiple predictions.

Explanatory Variables

Motivations

The key explanatory variables in the model include variables representing the various motivations and pressures that are theorized to drive VMP adoption, as well as the potential information sources firms may use to promote learning. In Table 2, I describe each of the pressures for possible VMP adoption as well as the indicators I use to measure those pressures.

To model economic pressures, I rely on a measure of the value of the oil and gas produced at the location where the VMP is adopted from the time of adoption through the end of 2015, also from the COGCC database (Table 2). My rationale for this is that firms generally

possess proprietary knowledge about what oil and gas resources are accessible at a given well, and while this information is not shared, firm decisions are likely based on their expectations about what can be produced at that wellsite and the economic benefits that are achievable at that site. Thus, using the volume of oil and gas produced at a wellsite is a proxy for a firm being driven to action by potential future economic gains.

I measure the potential for coercive pressure to drive action by comparing the similarity of firm VMPs to what are termed conditions of approval— or conditions that are placed on firms as part of the permitting process. I specifically compare the VMPs adopted at a given location to the agency Conditions of Approval (COAs) which were levied on all firms in the preceding three month period. To capture coercion, I utilize the average maximum cosine similarity between VMPs at a site and COAs mandated within the previous three month period. Admittedly this method is challenged by the fact that many locations have no VMPs, essentially ensuring there is a complete difference between conditions of approval and VMPS (Figure 2). One option to get around this would be to use company-wide measures as used for other variables; however, manual review of COAs demonstrates COAs are generally specific to a certain drilling area even more so than VMPs. When no VMPs are adopted, the median value of all VMPs is utilized instead. Given the need to assign median values to a large number of VMPS, as a second metric for coercion, I also evaluate the raw count of characters (bytes) included as COAs at a site. The theoretical motivation for including both of these metrics is that while cosine similarity can capture similarities between text where firms are looking to what's been levied by the agency in other domains and thus preempt such regulations, increased COAs may be evidence of coercive pressure on a firm in a more general sense as manual review of VMP documents also

demonstrates COAs are more common in contentious sites where agency involvement and concern is higher.

In terms of normative pressure, I conceptualize normative pressure as resulting from within the organizational field rather than external to the field. This contrasts to normative pressures that may result from public concern or agency concern— both of which should be considered in future research if adequate measures are available. I measure the potential for normative pressure to drive change by testing for the effect of firm membership in the major oil and gas trade group: Colorado Oil and Gas Association. Personal communications conveyed that COGA was a common sharing point for practice information.² As an additional proxy for membership in the organizational subfield, I include whether firms cite their primary NAICS Code as 211111, which corresponds to “Crude Petroleum and Gas”. Finally, because practices commonly adopted across fields are an additional measure of field-specific norms, I compute a measure of the dissimilarity between a firm’s globally adopted VMPs in all previous time periods to the VMPs adopted by other firms, relying on the mean similarity across all of a firm's’ VMPs to those VMPs adopted by all other firms. Firms with practices more unlike other firms may face pressure from the state or one of the above groups to improve their act. The “few bad actors” trope is common in oil and gas, and this similarity measure is intended to capture deviance from common norms within the industry. For these deviant firms, adopting new VMPs would be one method of redressing failures to meet industry norms.

Finally, I measure uncertainty by including three variables which are likely to increase with firm uncertainty about proper actions in permitting. First of all, many wells are permitted as

² Anonymous oil and gas permit manager, August 3, 2016

Wildcat wells. Wildcat wells are by definition exploratory or are drilled in unestablished fields and thus firms do not have a good estimation of what exact conditions will be in that site.

Secondarily, since firms tend to drill within a set number of fields, I include a variable capturing how many wells a firm drilled in the field where the VMPs are adopted within the previous years, which is expressed as a ratio in comparison to the total number of wells the firm drilled that year. Thus, a firm drilling mostly within the same field throughout a year would have its field percentage increase as wells were drilled while development in other fields would decrease the field percentage. Finally, I include a measure of mimetic isomorphism—calculating the volume of text borrowed from other firms in newly adopted VMP language using cosine similarity, again a local measure of text similarity between a firm's newly adopted text and text used by other firms. Taking another firm's language and editing it would not increase the cosine similarity, while borrowing exact text would. Under conditions of uncertainty, firms are expected to engage in search for actions that may help to mitigate the uncertainties they face. Adoption of exact VMPs from other firms is one method of minimizing resources needed to develop VMPs when a firm does not itself know how to proceed. Uncertainty is one of the key drivers behind mimetic isomorphism and by testing for mimicry I aim to capture the potential for uncertainty driving search promoting adoption of new-to-the-firm VMPs even if those VMPs are exact copies of VMPs used by other firms. Notably this metric does not specify what a firm is uncertain about. It could be any number of VMP subject ie: community impacts, proper remediation procedures, weed control. However, it is primarily conceptualized here as uncertainty about best VMP actions rather than other sources of uncertainty such as agency regulation or uncertainty in regards to impacts.

Table 2: Motivations, indicator variables, and sources.

Motivations	Indicator	Source
<i>Economic Pressure</i>	Oil and gas produced at well site over 5 year Period from permit date based on COGCC records (locations often have been previously drilled)	COGCC Production Database
<i>Coercive Pressure</i>	- Cosine similarity of adopted VMP to agency conditions of approval within previous 3 month period - Count of COA characters specific to new permit	COGCC Form 2A Documents
<i>Normative Pressure</i>	- Membership in Oil and Gas Trade Groups (API, COGA) - Membership in Oil and Gas Extraction Subfield (Via NAICS Code) - Dissimilarity of firm VMPs (Globally) and other firm VMPs (Globally).	- American Petroleum Institute (API) - Colorado Oil and Gas Association
<i>Firm Uncertainty (motivating search)</i>	- Mimicry— Cosine similarity of newly adopted VMPs to other firms VMPs (locally) - Percent of Wells Drilled in the same oil and gas field in the previous year - Wildcat Well (exploratory wells in unproven fields)	COGCC Form 2A Documents

Information

A variety of information sources about VMPs are available for firms. As discussed above I focus on three main information sources for firms to learn about what VMPs: firm experiential learning based on adverse events (spills), positive feedback via agency inspections that result in a pass, firm learning via agency regulatory action including fines and warnings, and learning via citizen feedback as measured by the COGCC complaint forum. As a measure of adverse events I include a count of all spills that occurred for a firm within the three months prior to the permit date at any well sites. For measuring fines and warnings, I rely on a count of Notices of Alleged Violations (NOAVs) at oil and gas sites. Since NOAVs serve as signals that corrective action is needed, this stands as an agency-motivated information source. Passed inspections within three months serves as a measure of positive feedback. Finally, to measure citizen feedback I count citizen complaints filed against a firm during the three months prior to the permit date.

Interactions of Motivation and Information Variable

To explore what motivations promote not only VMP adoption, but learning to promote VMP adoption and what promoted learning to that end, I test for the significance of interactions between spills, NOAVs, and complaints and the full set of motivation indicators, with the expectation that some motivations may lead to enhanced learning from certain information sources. I hypothesize that coercion enhances learning most across all information types. However, because interactions are not unidirectional, it is impossible to tell given this data if information sources increase motivations or if motivations drive information use— it is only possible to observe that the value of one variable is associated with a change in odds of the other

variable. Nevertheless interactions between motives and information sources provide evidence about how both can contribute to changed practices.

Control Variables

To control for other factors that may alter the likelihood of a firm changing VMPs, I include the control variables indicated in Table 3 in order to produce a multilevel model of firm VMP change. The multilevel model is of firms operating across and within counties at specific oil and gas locations in specific time periods.

I include a independent (non-correlated) random effect for firms, c_i . To address the fact that wells within one county are more likely to be alike, but also that counties are themselves spatially distributed and may be more geologically, environmentally, or socially similar to nearby counties, I utilize a Besag - York - Mollie model to allow for spatial smoothing in county estimates. Thus, counties are represented in the model by both v_i and u_i , where v_i is the area specific effect and u_i incorporates the dependency of neighbors (Equation 2),

Equation 2: BYM Random Effect Specification

$v_i = \text{area specific effect}$

$u_i = \text{spatially structured effect}$

For Neighbors i and j,

$$u_i | u_{-i} \sim \text{Normal} \left(\mu_i + \frac{1}{N_i} \sum_{j=1}^n a_{ij} u_j, s_i^2 \right), \text{ where } s_i^2 = \sigma_u^2 / n_i, \text{ where, } n_i = \# n(i)$$

$a_{ij} = 1 \text{ if neighbors, } 0 \text{ if not neighbors}$

Finally, I include month and year random effect d_i with a nonparametric smoothing term m_i via a random walk allowing for variation in the odds of VMP change across the time period studied,

such that permits adopted in July of 2013 more likely to be like those adopted in June of 2013 than July of 2016 (Equation 3).

Equation 3: Temporal Random Effect Specification

$$\begin{aligned} d_i &= \text{month year specific effect} \\ m_t &= \text{temporally structured effect} \\ m_t | m_{t-1}, m_{t-2} &\sim \text{Normal}(2m_{t-1} + m_{t-2}, \sigma^2) \end{aligned}$$

In addition to the random effects, a number of controls account for company specific and location specific factors. The selection of controls was based largely on experience talking with firms and residents as well as on lessons from fitting models of oil and gas impacts in Scott 2016A. For each *well location*, I include whether the location is in a sensitive or restricted wildlife area. This is critical as existence within a sensitive area can trigger additional involvement of the Colorado Department of Fish and Wildlife in the permitting process. I also include whether a well is in the Wattenberg Field which is the most developed oil and gas basin. This common basin contrasts to the wildcat or exploratory well variable which indicates when firms are drilling in undeveloped areas. To capture the potential for VMP change to occur differently where a well had already been drilled, I include an indicator for whether previous drilling occurred at a location. To capture potential community impacts, I include how far a well is from the nearest residence based on Open Streetmaps Data. At the *company level*, I include counts of passed and failed inspections in the preceding three month period, the number of employees as of 2015, and the company's founding year. While all these variables are described in Table 3, it is important to note that oil and gas data is prevalent—the focus here was on

building a parsimonious model to capture potential learning rather than a model that exactly predicts change in VMPs.

Table 3: Key variables, their indicators, and the source of the data used.

Variable	Indicator	Source
Company (IID Random Effect)	Company that owns site (<5 total= “other”)	Form 2A (COGCC 2015)
County (IID Random Effect, spatial smoothing via BYM)	County of wellsite	Form 2A
Month-Year (IID Random Effect, 2 month smoothing term)	Month and Year of Well Permit	Form 2A
Wildlife Area	Site within sensitive or restricted wildlife area	Colorado Department of Parks and Wildlife GIS Files (Colorado Parks and Wildlife 2016)
WildCat	Is the well a wildcat well?	Form 2A
Wattenberg Field	Is the well in the Wattenberg Field?	Form 2A
Distance to Nearest Residence	Distance to Nearest Resident (Degrees)	Open Street Maps Building File(Open Street Map 2016)
Previous Well At Site	Whether a previous well exists at the location	Form 2A
Passed Inspections	Number of passed inspections within 3 months	COGCC Inspection Database(COGCC 2015)
Employees	Number of Employees as of 2016	LexisNexis Academic(“LexisNexis Academic & Library Solutions,” n.d.)
Company Founding Year	Year of company incorporation	LexisNexis Academic

Full Model

Using a binomial likelihood, the full linear equation for the model can be described as in Equations 4 and 5.

Equation 4 and 5: Full linear model

Equation 4: Main effects only

$$\text{logit}(Y_{it}) = \beta_0 + X_i\beta_{1:8} + Q_i\beta_{9:15} + K_i\beta_{16:18} + v_i + u_i + d_i + m_t + c_i$$

Equation 5: Model with interactions

$$\text{logit}(Y_{it}) = \beta_0 + X_i\beta_{1:8} + Q_i\beta_{9:15} + K_i\beta_{16:18} + (Q_i, 1) * K_i\beta_{19:27} + v_i + u_i + d_i + m_t + c_i$$

Variable Specifications

X includes variables x :

Wildlife Area, Wattenberg Field, Distance to Nearest Residence, Previous Well At Site, Employees, Company Founding Year

Q includes variables q :

Economic Pressure, Coercive Pressure (2 measures), Normative Pressure (3 Measures), Firm Uncertainty (3 measures)

K includes variables k :

Spills, Fines and warnings, Citizen Complaints, Passed Inspections

$v_i = \text{counties}$

$u_i = \text{structural dependence of counties}$

$d_i = \text{month, year}$

$m_t = \text{two month nonparametric smoothing}$

$c_i = \text{company level random effects}$

where i represents each well location and t is a time period, x represents fixed effects, v the county level effects, u the spatial dependence between counties, d the month and year, m the dependence between months and years, and c the company level random effects. To enable fitting of the model allowing for spatial correlation, I utilize the Integrated nested Laplace approximation which allows for approximating the posterior marginals in a mixed level Bayesian model in a computationally efficient manner (Rue, Martino, and Lindgren 2012). The Bayesian modeling framework is appropriate as it approaches the data as observed outcomes of an administrative process, but it also enables straightforward and efficient inclusion of latent

dependency structures such as the spatially smoothed county-level metrics described above. I fit the model using a binomial likelihood which assumes that each case is a trial resulting in a success or failure and uninformed priors. To explore the modeled relationship I present first a basic model without the interactions between motivations and information sources. I then repeat the modeling for each of the information sources adding the interactions between each information source in separate models.

While I include multiple measures for uncertainty, coercion, and uncertainty, and thus there is potential for these variables to be correlated reducing the effect size of any individual measures, institutional pressures are also multifaceted and so much as the goal is to reflect real-adoption on the ground, I made a modeling decision to include all of these variables in an attempt to capture the full effect of each.

RESULTS

The analysis contains 8154 well locations, representing 121 unique companies with more than 5 individual observations apiece. These locations occur across 34 of Colorado's 64 counties. Approximately half of these locations occur within Weld County, and 706 of the locations are within the Wattenberg Field. An additional 441 were exploratory or wildcat wells. In other words, about half of the wells with changes were either attempting to identify a new opportunity for a company or were within the sizable and highly-populated (compared to other regions of oil and gas development in Colorado) Wattenberg Field.

Table 4 shows how increasing the threshold of textual change required for the VMPs to be coded as changed reduces the number of wells classified as possessing textual change. Because the sample size of the change-observed set decreases as the quantile increases, unless

the data fit the model better (due to eliminating noise in the dependent or change variable), we would expect larger confidence intervals for each variable as the threshold for change increases towards a higher quantile value.

Table 4: Percentiles of change, and the impact setting the change threshold has on the sample size of wells where a change in VMP language is observed.

Percentiles	Change (1-similarity Level)	Count of Observations	
		No Change	Change
0.71	0	5868	2286
0.75	0.012	6116	2038
0.8	0.033	6523	1631
0.85	0.081	6931	1223
0.9	0.179	7338	816
0.95	0.519	7746	408
0.99	0.997	8072	82

Textual similarity scores ranged from 0 to .99 with a mean of .06, but a median of 0 (indicating no change). Thus, for selecting thresholds of textual change for checking the model, I set the lowest bound at a change quantile of 0.71, at which threshold any deviation in text counts as a change in VMP, to a change quantile of 0.99, at which the adopted text is completely dissimilar from the previous test, testing each of the quantiles listed in Table 4. By the 0.90 quantile, only 816 wells remain in the change group— a number reduced to just 408 by the 0.95 quantile. Thus, as the threshold increases, the sample size for the VMP change category decreases, which should produce increased standard errors for each model so long as the process producing the change remains the same. Thus, because many of the smallest changes are likely due to errors in textual

processing or administrative details, the lowest threshold for change would also likely have increased standard errors.

Using the text similarity structures above, and categorizing the words that most frequently newly occur within each change category, there are no obvious trends as far as meaningful words occurring more often in one change quantile than another. Instead, there are meaningful words in all categories. The presence of “Will” in the 0.9 to 0.97 change quartile (change>95%) likely stems from most VMPS when first adopted taking the language, “the company/operator WILL”. Accordingly, large changes may indicate a more general “newness”

of practice but not an increase in regulatory stringency.

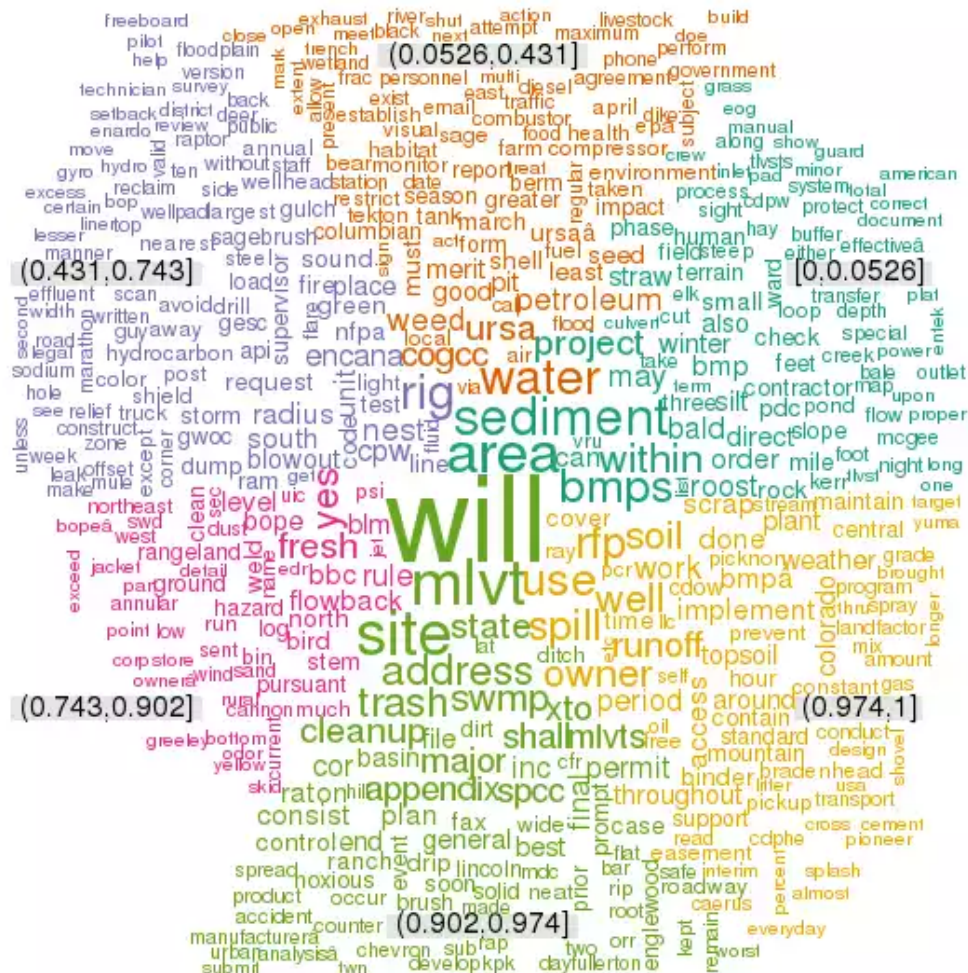


Figure 2: Most frequently occurring unique tokens within each change category. These words are words which had never occurred before in a company's VMP. Note, no change category clearly delineates between significant and non significant changes— this furthers the rationale for using various thresholds and evaluating what leads to change in unique text.

Because the modeling of what constitutes a change is key to the project design, I present credible intervals that incorporate results from models with varying sensitivity to text change in the dependent variable. Specifically, I follow the approach of Rover (Röver 2015) in providing a meta-analytic credible interval that incorporates results from the 0.71 to 0.95 quantile thresholds

of textual change. Thus, the model τ estimates can be assumed to be the credible intervals for a range of text change definitions while μ estimates are estimates of a population mean for models based on all included thresholds.

Table 5: Descriptive statistics for pressure and information variables included in the model

Variable	Indicator	Minimum	Maximum	Mean
Coercive Pressure	Similarity	0	0.52	0.38
	Count of Mandate Text *	11	25000	536
Normative Pressure	Similarity	-1.49	8	0
	Colorado Oil and Gas Member	5050 member locations		
	Oil and Gas Extraction	3600 member locations		
Competitive Pressure	Oil and Gas Production *	0	4.0×10^8	1.78×10^4
Uncertainty (Mimicry)	Similarity to other VMPs	-0.6	9.7	0
	Wildcat Well	0	1	0.17
	Wells in County	1	34	22
Information	Spills *	0	138	4
	Fines *	0	18	0.36
	Complaints *	0	43	0.94
*Logged in Model				

Basic/Main Effects Only Model

I first fit a model with only the main effects of information sources and motivations for learning in addition to the statistical covariates. This model allows for testing threshold values in a less computationally intensive manner. Additionally, though interactions are necessary for testing research question three, they are not central to research questions one and two. Thus, fitting a model with only main effects is advantageous.

Motivations

Coercive Pressure

Increases in the similarity of adopted VMPs to previous conditions of approval is associated with lower odds of the company adopting new VMP language (Figure 3). However, while not statistically significant based on all possible thresholds, for the majority of thresholds the count of COAs adopted in that time period is associated with higher odds of change.

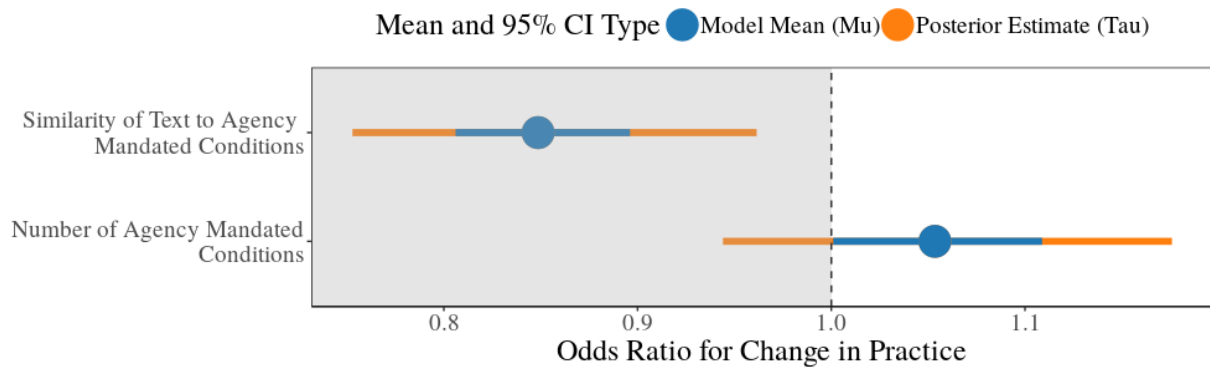


Figure 3: 95% credible intervals for coercive pressure variables, with the change in odds ratio associated with a one standard deviation in the independent variable. Credible intervals show model mean (blue) and credible estimate for all possible change thresholds (orange).

Firm Uncertainty

None of the variables used to evaluate the potential for uncertainty to motivate firm behavior were statistically significant, with credible intervals nearly all crossing one (Figure 4). Furthermore, mimicry of other firms varies widely with changes to the assumption about the threshold for textual change. This is potentially a result of the fact that for a firm to mimic other firms, they have to adopt VMPs, and while this does not mean that such VMPs are new to the firm (the dependent variable), where new VMPs are present, mimicry may also be more likely.

As the threshold for change increases, mimicry can occur for more and more non-change firms. When the threshold for change increases, the observed statistical effect of uncertainty in the model decreases as there is generally more potential for new text within VMPs.

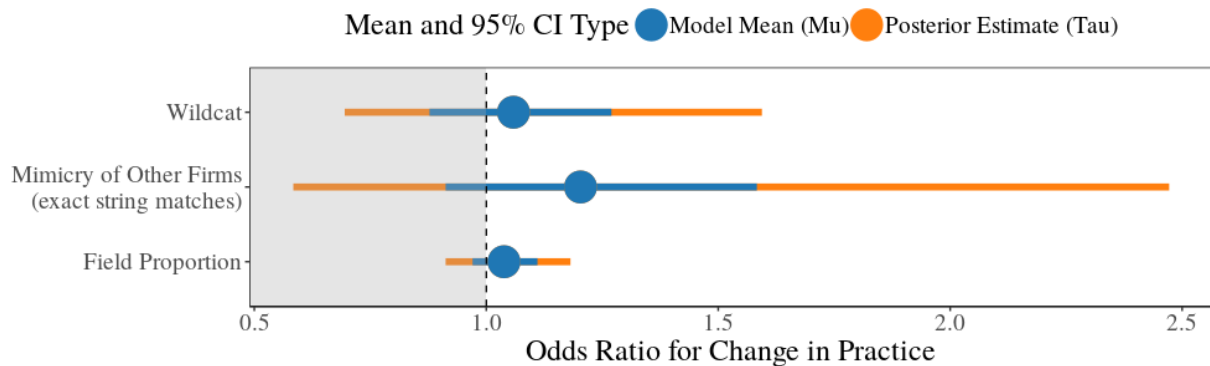


Figure 4: 95% credible intervals for uncertainty variables, with the change in odds ratio associated with a one standard deviation in the independent variable. Credible intervals show model mean (blue) and credible estimate for all possible change thresholds (orange).

Normative Pressures

Normative pressures, like coercive pressure, are not consistent in the directionality of the association with changes in VMP language; however, the interpretation of the effects despite directional differences follows a common pattern (Figure 5). First of all, membership in the Colorado Oil and Gas Association (COGA) is consistently associated with lower odds of observing a complaint, though the result is not statistically significant at any change threshold. However, identification of oil and gas as the company's major industry is associated with a significantly lower odds of VMP change. These two variables have a correlation of 0.21 suggesting including each reduces the observed effect size in the model. Finally, deviance from the VMPs of other firms is associated with higher odds of change across different change thresholds, though the credible interval for the model mean and posterior estimate suggests the

result is not statistically significant given the observed data. Since having management practices unlike other firms operates in the opposite direction as being a member of the organizational field, together, the three variables indicate that fitting within field specific norms is associated with lower VMP change odds.

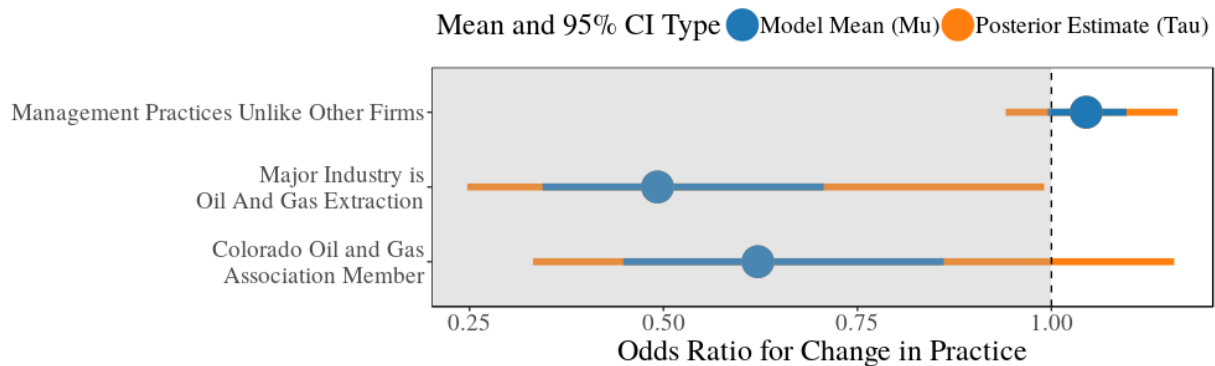


Figure 5: 95% credible intervals for normative pressure variables, with the change in odds ratio associated with a one standard deviation in the independent variable. Credible intervals show model mean (blue) and credible estimate for all possible change thresholds (orange).

Oil and gas production at a site is not associated with higher VMP text change odds.

While this is a consistent finding across all model runs, it is important to acknowledge that production of oil and gas is strongly correlated with a well being a wildcat well (-0.3), the count of spills for a company (0.3), and well production in the Wattenberg field (0.3). Thus, some of the economic motivation effect may be captured within these variables. Wells in the Wattenberg Field are among the most productive in Colorado. Companies that produce more oil may spill more oil. Finally, uncertain wells may lack extractive infrastructure and face a higher potential to not produce oil or gas in significant volumes.

Information

None of the information sources studied— spills, violations, passed inspections or complaints— were associated with invariant VMP change odds at all thresholds (Figure 6). However, for the count of passed inspections, the smoothed model mean is associated with higher odds of text change and under most models passed inspections are associated with higher odds of change at the 95% credible level.

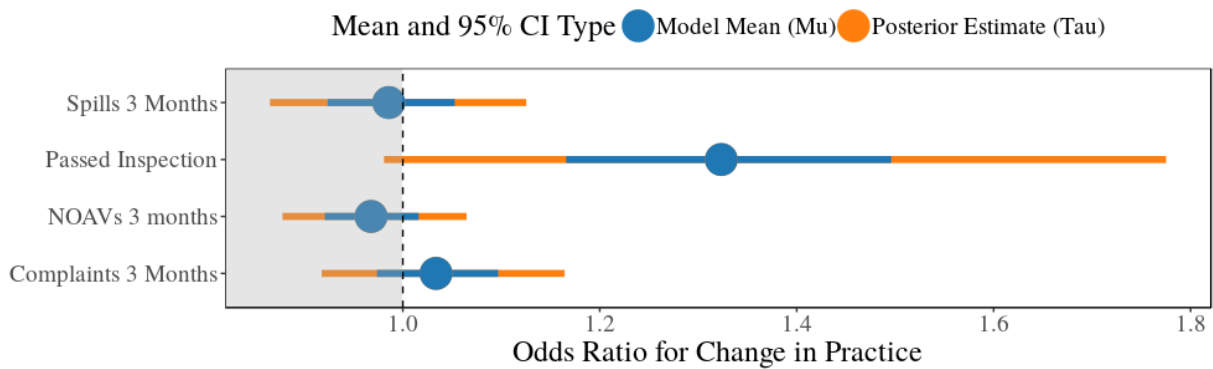


Figure 6: 95% credible intervals for information sources, with the change in odds ratio associated with a one standard deviation in the independent variable. Credible intervals show model mean (blue) and credible estimate for all possible change thresholds (orange).

While these main information sources capture firms using information across multiple wells were not significantly associated with changes in VMP odds, other location specific variables were statistically significant. This suggests that firm adoption of VMPs are associated with location-specific requirements and environmental contextual variables rather than cross-firm information sources such as spill counts (Figure 7).

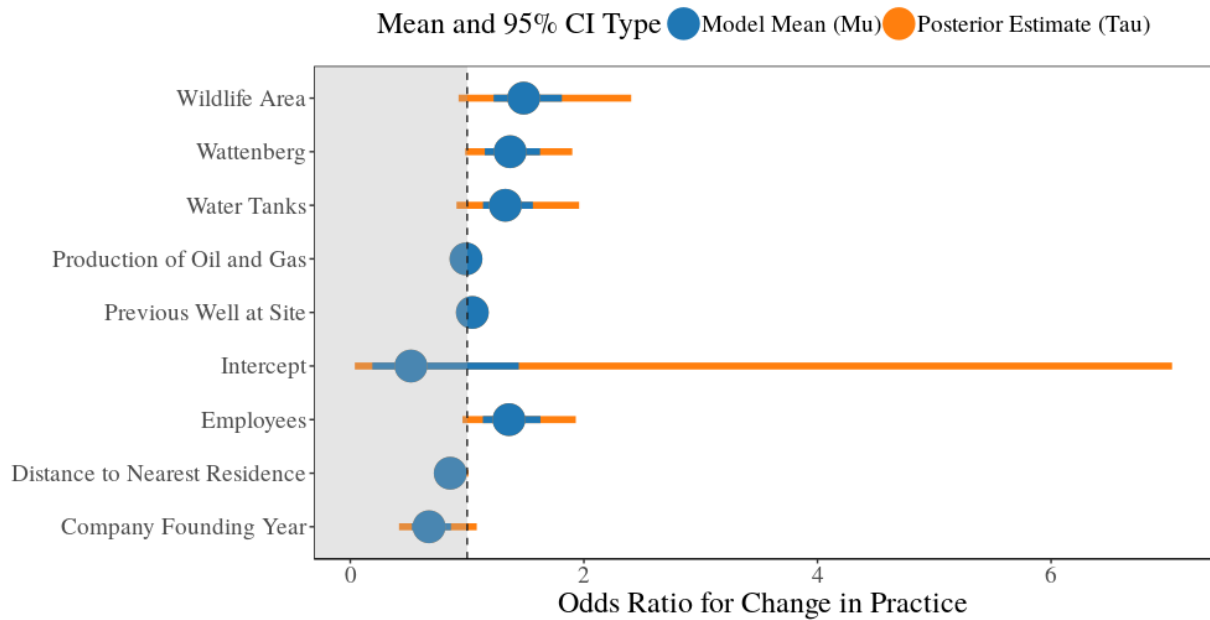


Figure 7: 95% credible intervals for fixed effect controls, with the change in odds ratio associated with a one standard deviation in the independent variable. Credible intervals show model mean (blue) and credible estimate for all possible change thresholds (orange).

Among these contextual variables, distance to nearest residence is associated with lower odds of VMP change. Additionally, locations closer to residents, within a sensitive or restricted wildlife area, or with water tanks are associated with higher odds of change at most change thresholds.³ Finally, having the location in the Wattenberg Field, the suburban area north of Denver, is also significantly associated with higher odds of VMP change.

Among company-level variables, larger companies, or companies who have more employees are associated with higher odds of VMP change controlling for other variables while older companies are associated with lower odds of VMP change.

³ Water tanks are commonly used for hydraulic fracturing operations.

Interactions of Motivation and Information

Building on the main effects model above, I next repeat the model adding interactions between each of the motivations and learning information sources. To recall from the theoretical framework, the purpose of testing interactions is to evaluate whether motivations can operate to encourage not only VMP adoption, but firms using information sources as evidence within VMP adoption. To improve the parsimoniousness of the model, I fit each model separately. Because interpreting logistic interactions can be challenging given that the marginal effects depend on the sum of the linear combination of covariates, I simulate posterior marginals, bootstrapping values of the sum of the main and full effects across possible ranges for the posteriors (Scott 2016). The benefit of this method is we can visualize what the sum of the linear combinations of the main effects and the interactions are for each pair of variables. The results in the figures below present the full effect of the interaction either via the main effect of the motivation and the sum of the interaction between the motivation and the information source (Figure 6).

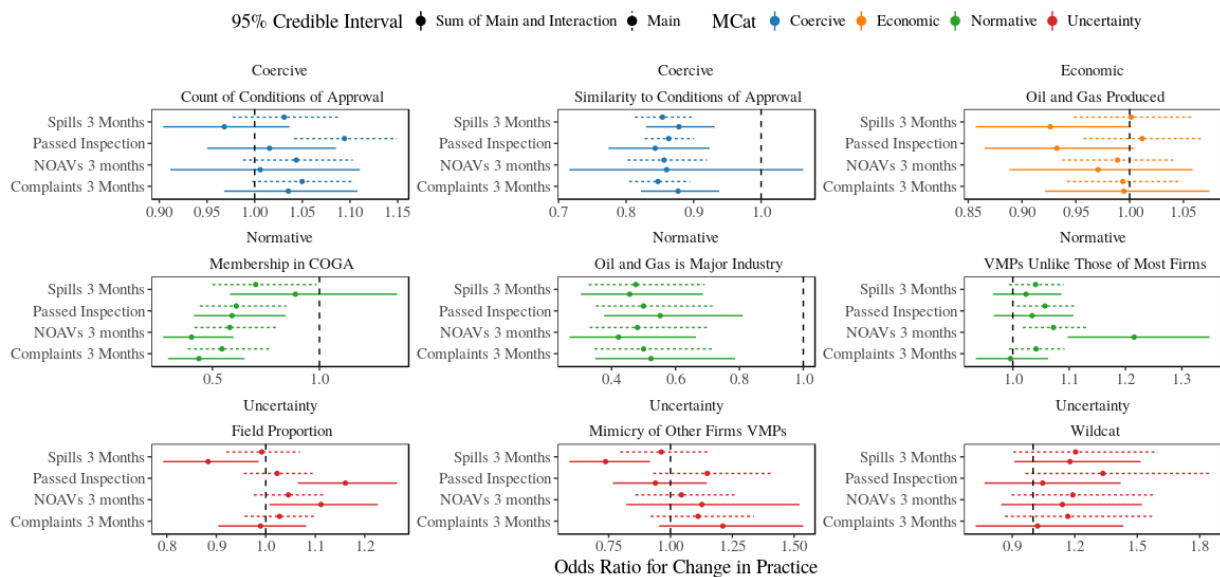


Figure 8: 95% fixed effect credible intervals for models containing an interaction between knowledge acquisition sources and motivations. Each cell is a measure of motivation by one of the included metrics, with main effects of the motivation as the solid line and VMP change and the sum of the main effect of the motivation and the interaction term with the information source as the dashed line.

The interactions provide evidence of how motivations and information sources interact. However, the main finding is that the relationship between information sources and motivations is complex— information operates on motivations and at the same time motivations likely determine whether firms value one of these sources in decision making. Across the uncertainty measures, spills are associated with a weakened association of uncertainty and change, a trend that is strongest for the field proportion and mimicry measures (Figure 8). Spills, likewise, strengthen the association of coercive conditions and higher odds of change. In terms of complaints, complaints strengthen the statistical relationship between coercive pressure and mimicry driven by uncertainty though this finding is inconsistent across model runs.

Passing inspections is associated with a weaker association between coercive pressures and the odds of VMP change. Violations weaken the relationship between deviance from VMP and higher odds of VMP change, while they also strengthen COGA membership's association with lower change odds. Thus, for firms who are most average oil and gas firms in terms of identity and practice, violations weaken the association of norms and change.

DISCUSSION

Does information contribute to VMP Change?

The evidence presented here does not support the generally proposed hypothesis that firms utilize agency provided feedback in deciding to adopt new VMP language. Instead a much more nuanced image of firm decision-making emerges. Without motivations, no sources of information (feedback) are associated with higher odds of VMP change. Thus, the provision of information to firms, taken alone, cannot be assumed to lead to changes in practice. This mirrors findings from throughout public administration, communication, and management and which highlight that simply providing knowledge to actors will not influence behavior (Simis et al. 2016; Baumgart-Getz, Prokopy, and Floress 2012). Given the need for firms to innovate using the information, and the potential for barriers including cognitive limitations, gatekeepers, path dependency, the fact that change is not associated with information alone is not surprising (Simon 1972; Harorimana 2008; Frishammar and Åke Hörte 2005; Paul Pierson 2004). Instead, this research emphasizes the need for a problem to drive practice search (Cyert and March 1963). VMP program design should thus focus on motivation and not knowledge provision alone.

However, the findings in regards to motivations indicate this is likely to be far from a simple process of manipulating firm motivations. Firm motivations for practice change are often modeled as associated with both higher and lower odds of VMP change. In this discussion I explore this finding from two possible directions. First of all, there is a possibility that the findings that the mixed findings in regards to motivations are an artifact of the data analysis process. However, it is also possible the mixed findings for coercive and normative pressure are evidence of deep complexities in institutional motivations for firm action.

As text similarity methods are not commonly adopted within public administration research, it is possible the methods applied are indicative not of the pressures they are intended to capture. For example, based on the data as observed, firms adopting VMPs very alike to the Conditions of Approval have decreased odds of VMP change. This could result from the fact that firms who adopt more VMPs in general are more likely to adopt VMPs very alike to COAs—these firms may also have less to learn since they already have adopted many VMPs and there is a larger body of VMP comparative text. Additionally, for firms with no VMPs, the similarity for these firms had to be fixed at the median value owing to the fact that text similarity is undefined if there is no text to compare to. The median was chosen as the value in an attempt to not bias the metric, but it should be noted fixing the value to zero would drive the opposite finding as firms with no new VMP language by definition cannot have learned to adopt VMPs. In that case the zero is an artifact of the method and tells us little about coercive power. A similar story may play true for uncertainty. Thus, one future direction for this project is to continue to evaluate how changes in text and comparisons between different text similarity methods can be used in social science research. While I was careful to choose text methods which should be independent of each other, the complexities of text analysis makes ensuring no biases remain in the end result an empirical challenge.

These difficulties aside, the results here may also indicate that the motivations that shape voluntary practice adoption and change are simply more complex than purely promoting or limiting change. Coercive pressure measured via counts of rules is associated with higher odds of changes in VMPs under most thresholds, while coercive pressure measured via similarity of VMP text to mandated rules is consistently associated with lower odds of VMP change.

Coercion, measured via counts of rules, may be capturing general pressure from the agency to be good actors at specific locations (a hypothesis for future research). These COAs are likely indicative of a stricter permitting process than occurs for permits where there are no COAs. It is plausible that the strictness of the permitting process should increase the willingness of firms to adopt VMPs as such practices may help their permit to be seen in a better light.

For the similarity metric of coercion, the observed finding may result because a threat of future regulation is unlikely to produce truly new, innovative VMPs, but instead results in firms adopting practices which have already been used and tested at least occasionally (another hypothesis for future research). Regulators would have limited rationale for imposing mandatory rules which were not already used by firms. Thus, a credible threat of regulation may not be effective in driving innovation. Instead, a credible threat of coercion may lead towards adopting more VMPs, but ones that are already established. This finding gets at a difference between studying learning and innovation via voluntary practice versus the simple adoption of voluntary practice. Innovation requires firms to adopt new practices. By using a dependent variable that emphasizes novelty of practice this paper has moved away from what encourages adoption to what encourages adaptation. Of course, this does not reflect novelty across firms and a follow up paper could study this pure aspect of innovation (Berry, Berry, and Sabatier 1999).

While the club perspective on voluntary program participation has been popular, here, fitting within norms is generally associated with lower odds of VMP change. Even the metric for deviance indicates that firms further from the field-specific norms are most likely to change—this observed association has a multitude of potential explanations. Members of the local trade organization or the industry classification are less likely, given data like these, to change VMPs

than those who are not. As a result, this paper may provide evidence that while “clubs” may encourage participation in voluntary programs as firms seek legitimacy from within the field or from public actors, legitimacy may not be associated with innovation. In fact, another hypothesis for future study is that firms who are most well established within a field may have the least motivation to innovate in terms of practices. Or, firms who are farther afield may be drilling in more risky areas, forcing them to experiment with management practices in an attempt to garner agency approval and public approval of their actions. These firms also may be striving to improve reputations due to their current non-membership.

Buried in this point is a question of if change in VMPS necessarily means *better* practices. While one may assume that practices should be continually improving, this is almost certainly an erroneous assumption. However, what constitutes improvement is not even necessarily clear. For example, if a practice decreases private investment or regulatory costs at a site allowing development to be economically productive while incurring a relatively larger impact to the environment, it is possible that this investment may be a net improvement in a pareto-optimal sense even if the impact to the environment are never recuperated (Maxwell, Lyon, and Hackett 2000). Would all stakeholders agree such a policy is an improvement? Likewise establishment of one best practice such as noise abatement may reduce noise but there is often a cost. Residents find sound barriers ugly and they sometimes think firms are hiding other, more serious violations behind the barrier (Personal Interviews October 2016). Thus, a practice meant to improve social impacts may decrease trust.

Moreover, learning, itself, could help to promote stagnation in change if a practice is proven to work and are thus firms commonly adopt them repeatedly. Learning, after all, can

occur either in regards to current or future practices and if practices work and are widely adopted they will cease to occur as part of change (Hargadon 2002). This is demonstrated in Figure 9, which categorizes newly adopted terms in each period via topic modeling. In Figure 9, words closely related to the “erosion” VMP occur less frequently over the sample period while words related to “lights” occur more frequently. This does not mean that “erosion” VMPs are not being adopted, but they are no longer adopted for the first time. Figure 9 also demonstrates that the two major COGCC setback (distance from homes/schools/etc) rulemakings in 2011 and 2013 both have large volumes of new word adoption— this effect is also captured in the temporal trend for textual change from the models which is provided in the appendix.

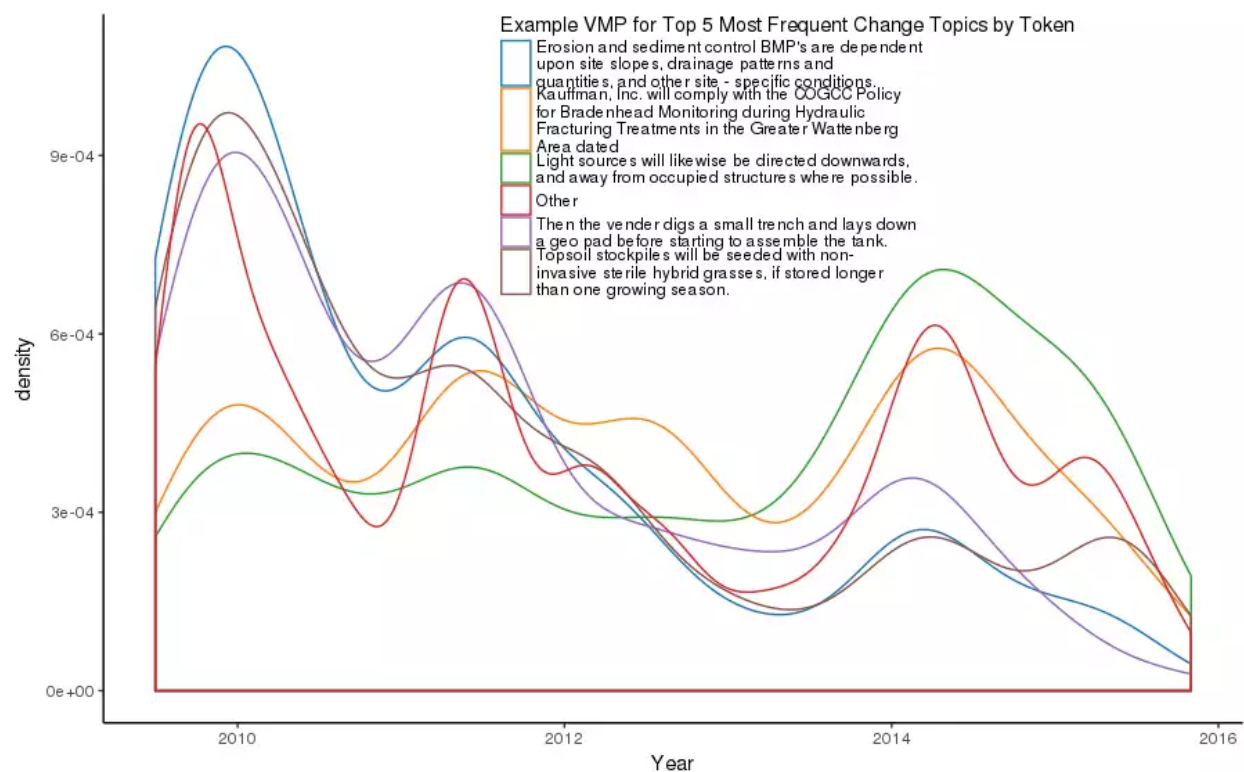


Figure 9: Kernel density estimates of topic model frequency of adopted VMPs across the sample period. Notice, this does not mean each VMP type is no longer adopted, but they are no longer adopted by firms for the first time.

One follow up approach this project could be to combine the topic model result above with a model of textual change to evaluate periods of change within topics rather than grouping all VMPs into one category. However, such an approach would greatly benefit from more data than is available for this paper either by bringing in other states or other similar industries.

Other scholars have identified in the past that learning about current practices may reduce the economic benefits of adopting new practices (Feichtinger et al. 2005/9), but I could identify no evidence that staying with current VMPs would improve outcomes over adoption of new VMPs, although this is certainly possible, and could explain why industry trade group members are least likely to change practices (Huber 1991). In either case, the story of institutional motivations is not one of motivations being clearly associated with univariate change. Instead, we I find institutional motivations have a complex relationship with voluntary practice change that merits future research, especially in regards to the complex multiple pathways by which coercion and normative pressure are here associated with VMP change.

CONCLUSION

While my expectation was that economic, normative, coercive pressure and uncertainty all would motivate change in VMPs based on Delmas and Toffel's framework, this was not the case (Delmas and Toffel 2004). There was no significant finding in regards to competitive pressure. Uncertainty did not have a clear positive or negative association either. However, coercive pressure and normative pressure appear to both be associated with inhibiting and encourage learning depending on which element of the pressure is stressed. This leaves a pathway for future work in understanding motivations for firm voluntary practice adaption.

In general, this research suggests that contrary to what might be assumed in a voluntary governance system, the lack of formalized coercive power in voluntary systems does not mean coercive power is not a paramount part of policy formation. Instead, I find the threat of formalizing coercive power and the atmosphere of coercion are associated with potential adaptation and stagnation of management practices.

Thus, it is important for future scholars to investigate in more detail what elements of coercion inspire change. One direction could be to investigate the interplay between true exhortation from agencies, a credible threat of future regulation, or reputation with the regulating agency is the strongest motive for VMP change and innovation. One clear hypothesis for future research is that coercive pressure via legitimacy in the eyes of the regulator may be associated with higher odds of VMP innovation, but a direct credible threat of future regulation may not share this association. Instead, such pressure may lead firms to voluntarily adopt old practices rather than innovating to new practices. Voluntary programs with a credible threat of potential regulation may be most likely to achieve participation, but not newness in selected principles. These papers may rely on text similarity for some aspects though the difficulties in comparing mandated rules to newly adopted rules discussed above may indicate comparison by other methods may be more empirically fruitful in contributing to the findings here.

In terms of normative pressure, this paper indicates firms who are further from the norms of the field have higher odds of VMP change. This may align with theories on path dependence and isomorphism which suggest change is least likely at the center of an organizational field, or where there are increasing returns to current practice (P. Pierson 2000; Delmas and Toffel 2004).

An aside to be noted here is that oil and gas companies are often referred to by residents as a monolithic entity by the public and seen to act as one large agency in a way that other industries are not.⁴ This research indicates this might not be a simple perception on the part of residents, but may actually affect the way in which these companies behave, resulting in fitting within norms being associated with lower change odds. If one company adopting new practices puts pressure on other companies to do so, there may be normative incentives for firms not to voluntarily adapt practices overtime.

In regards to the VMP forum, this paper finds very limited evidence about knowledge and change. . It is of course possible the information sources tested were simply the wrong information sources; however, as spills, violations, and complaints are major sources of administrative feedback to firms, this should challenge whether negative feedback can be effective in promoting firm learning. While passed inspections were associated with higher odds of change, one interpretation of this finding is that those companies who perform well also change the most— thus the relationship between inspections and change is purely capturing a good-actor association. This hypothesis presents a very different image of a VMP forum than the one laid out in program theory model described in the theoretical background, but it may fit within a leader-laggard model of VMP change (Howard-Grenville 2007).

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3. Protecting Via Complaints: Firm Actions And Citizen Complaints About Oil And Gas Development.

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ABSTRACT

Studies of citizen responses to oil and gas development have focused on collective engagement or individual perceptions, not the connection between individual perceptions and the choice of citizens to engage governments. Multiple US states maintain official complaint processes which allow citizens to contact government about concerns creating an avenue for engagement. This paper uses a sample of 17 interviews with complainants about oil and gas impacts in the state of Colorado to study what motivates complainants to file complaints, and how firm actions and forum design can shape the likelihood of citizens complaining. To code the semi-structured interviews and documents from these locations, the Protective Action Decision Model (PADM) is used because it provides a model for connecting contexts, perceptions, and decisions made about threats of an environmental or technical nature. Based on the content analysis and coding of the interviews, proximity and intrusiveness are key in motivating complaint behavior. Moreover, citizens complain following environmental cues that they perceive as a personal threat to their health or property more so than they complain about threats to their wider community. Finally, despite the fact that complainants expressed low efficacy in complaining and negative sentiments about both firms and residents, citizens kept complaining, especially if they were involved in community organizations that could leverage complaints about well-sites.

INTRODUCTION

Oil and gas extraction, while potentially economically beneficial to communities, presents externalities to citizens in the form of odors, noise, and pollution that do not stay within the immediate property where drilling is occurring, meaning individuals who are not parties to contracts must bear some cost (Milt, Gagnolet, and Armsworth 2016; Office of Indian Energy and Economic Development 2017; Small et al. 2014). Even if pollutants are controlled, other externalities such as traffic, dust, community disruption and stress can impact the wellbeing of local populations (Jacquet 2014). One way state governments can monitor wellbeing of local citizens is through engaging citizens via complaint processes. Complaint forums serve as a form

of engagement by allowing expression of interests and values while enhancing feedback and monitoring (Bingham, Nabatchi, and O’Leary 2005, 548).

Complaint processes are part of the oil and gas regulatory structure in several states including Texas, Wyoming, Oklahoma, and in the case under study in this paper, Colorado. The Colorado Oil and Gas Conservation Commission serves as the regulatory agency for mineral extraction within the state of Colorado and maintains a citizen complaint program which allows complaint based monitoring and communication with citizens and firms about local impacts of oil and gas. While a state-operated complaint forum creates the structure for complaints, the choice to participate is ultimately the decision of the resident. Complaints are a thin form of engagement, defined by their creation of one-way or two-way ties between state agents and residents and potentially between firms and residents (Nabatchi, Ertinger, and Leighninger 2015; Fung 2006). Moreover, as a downstream method of engagement, they serve an entirely different purpose than upstream engagement processes such as planning meetings or public comments because they provide post-planning policy feedback (Bingham, Nabatchi, and O’Leary 2005). Thus, understanding the willingness and motivations of individuals to engage with public actors via complaining can inform design of adaptive environmental policies (Collins and Ison 2009).

Though it has been previously applied largely to citizen behavior in response to natural hazards, the Protective Action Decision Model (PADM) describes variables that can be useful in characterizing the choice and willingness of citizens to engage in complaint behavior (Lindell and Perry 2012). In this paper, I apply the PADM to the choice of citizens filing complaints about oil and gas within the state of Colorado. The PADM is a stage-based model developed to provide an explanation for individual actions taken to mitigate and prepare for natural hazards (Lindell

and Perry 2012). Specifically, I evaluate how environmental and social context and individual pre-decision and decision processes alter individual choices to file a complaint. By classifying the filing of complaints as a protective action, I demonstrate the usefulness of the PADM for characterizing protective behavior in regards to a man-made risk— only the second application of PADM in this manner (Cheng et al. 2017). In what follows, I provide a theoretical rationale for the project by reviewing relevant literature. I then describe the research methods, provide summary results, and interpret the results so as to produce five hypotheses about engagement with oil and gas risks via the complaint system.

REVIEW OF LITERATURE

Studies of civic engagement around oil and gas can largely be divided into evaluations of individual or collective action. While some regions have seen strong collective actions connecting multiple stakeholders (Vasi et al. 2015; Valencia and Carrillo Martinet 2017; Fisk 2016), other work has suggested individual actions remain more common than collective ones, potentially due to feelings of powerlessness when working with oil and gas companies (Eaton and Kinchy 2016). In Colorado, the geographic focus of this paper, local collective efforts to inhibit or stop oil and gas development have led to ballot initiatives, government task forces, and increased stringency in oil and gas rules (Weible and Heikkila 2016; Heikkila et al. 2014; Neese 2005).¹ Importantly, these collective efforts required individual citizens to engage in addressing perceived threats to their health, property, family and communities.

¹ When applied to industrial or waste siting decisions, local opposition is commonly termed Not-In-My-Backyard Syndrome, or NIMBYism (Burningham, Barnett, and Walker 2015), referring to the opposition of local residents to proposed development which may adversely impact development (Kraft and Clary 1991; Dear 1992; Schively 2007; McAvoy 1999). The theory behind NIMBY syndrome posits that citizen concern is amplified when a site negatively affects them but there may be some larger public good achieved from that site.

At the individual level, previous work on lay perspectives on oil and gas development and specifically horizontal drilling and hydraulic fracturing of unconventional gas reservoirs (UGD) have assessed how objective and subjective measures of perceived impacts and benefits are related to demographics, psychological factors and place-based characteristics. Individuals who are more educated, have higher incomes, and are members of the Democratic Party are more likely to support moratorium policies while older, while white individuals and males are less likely to support moratoriums (Boudet et al. 2014/2; Clarke et al. 2016; Davis and Fisk 2014; Alcorn, Rupp, and Graham 2017). Meanwhile, individuals with more knowledge of the process of hydraulic fracturing are less likely to support moratoriums (Alcorn, Rupp, and Graham 2017). Additionally, distribution of economic benefits to communities (Paydar et al. 2016) and distribution of benefits to individuals are both associated with reduced perceptions of risk and opposition to moratoriums (Brasier et al. 2013; Jacquet 2012). While these surveys of citizen perceptions provide an understanding of how citizens are likely to approach oil and gas development in regards to large-scale policy decisions, they provide little evidence of how local context, citizen perceptions, and tradeoffs shape behavioral responses and civic engagement around oil and gas development.

Studies of individual behavioral responses to oil and gas development are relatively sparse, though it has been demonstrated that bottled water purchases increase in impacted areas (Wrenn, Klaiber, and Jaenicke 2016). Concerns about environmental risk may also contribute to an increased rates of contacting local representatives or voting for a candidate opposed to oil and gas development (Theodori 2013). These individual actions to engage directly in management of oil and gas or to voice opinions about how oil and gas should be managed not only meet the

democratic ideal of good governance (Fung 2015), but have the potential to improve environmental management by promoting policies that reflect and can adapt to a wider range of stakeholder knowledge and concern (Armitage, Marschke, and Plummer 2008/2; Davies and White 2012; Barnard et al. 2016; Fiorino 1990; North et al. 2014; Gouveia et al. 2004). Moreover, citizens can serve as some of the eyes and ears of regulators and public managers on the ground in ensuring externalities are adequately mitigated (Kinchy, Parks, and Jalbert 2015; O'Rourke and Macey 2003). Thus, from a public policy perspective, understanding how citizens perceive of, respond to, and engage in managing risks of oil and gas extraction in their local communities is critical.

Though complaints are commonly used to improve monitoring of potential environmental and social harms of industrial activity, evidence about how complaint systems work as part of environmental regulation systems is limited. Reviews of complaints have recognized them as at-best a noisy indicator of potential harm, as nuisance complaint or complaints not under that agency's jurisdiction can make identifying real instances of harm difficult (Warwick and Ortolano 2007; Weersink and Raymond 2007). Other scholars have pointed out that investigations of complaints may also be problematic. In their review of the complaint system for oil and gas in Colorado, Opsal and Shelley find that efforts to address complaints by the State agency were generally insufficient at attributing firm fault to identified complaints (Opsal and Shelley 2014). Complaint systems may serve as a poor measure of environmental harm, and the state's response to complaints may not be unbiased, complaints nevertheless provide an avenue for citizens to engage with the function of government. Moreover, in both Warwick and Ortolano

(Warwick and Ortolano 2007) and Opsal and Shelley's (Opsal and Shelley 2014) analyses, complaints reflect an underlying concern about the nature of oil and gas development.

Despite effort to understand the role risk perception may play in driving attitudes about risk, risk attitudes themselves are not the sole driver of action in regards to a risk. Actions in regard to objects and risks are not necessarily taken up in response to attitudes about a hazard but instead are largely based on attitudes about actions that may mitigate or address that risk (Ajzen 2012; Fishbein and Ajzen 1977). The Protective Action Decision Model (PADM) operationalizes this concept to explain how individuals choose to undertake specific actions in regard to future threats of natural hazards (Wachinger et al. 2013; Lindell and Perry 2012). However, recent application of the PADM to earthquake response behavior and air pollution indicates that the PADM can be an effective framework for considering how individuals respond to various environmental and social cues and take action to both address current impacts and mitigate future ones (Jon et al. 2016; Lindell et al. 2016; Cheng et al. 2017). The PADM is a useful model for exploring response to UGD risks and events because it recognizes that a combination of cognitive, psychological, and social processes are critical in shaping not only citizen attitudes about possible actions but also citizen willingness to uptake those actions as opposed to embracing other mitigation alternatives or doing nothing (Wachinger et al. 2013; Tekeli-Yeşil et al. 2010; Jon et al. 2016).

The Protective Action Decision Model in the Context of Oil and Gas Development

According to PADM, individual action is a result of predecisional processes— these cognitive processes act on core perceptions about the nature of a threat, perceptions of stakeholders, and perceptions of protective actions that can be taken. These perceptions are

shaped by and respond to the environmental and social context including identities of self, identities of place, and connections to other stakeholders. Given attention and comprehension of a threat, an individual is expected to respond to an environmental or social cue instigating a protective action process whereby the individual identifies a hazard, assesses the severity and nature of the risk, searches for protective actions, evaluates protective actions, and finally implements an action (Figure 1).

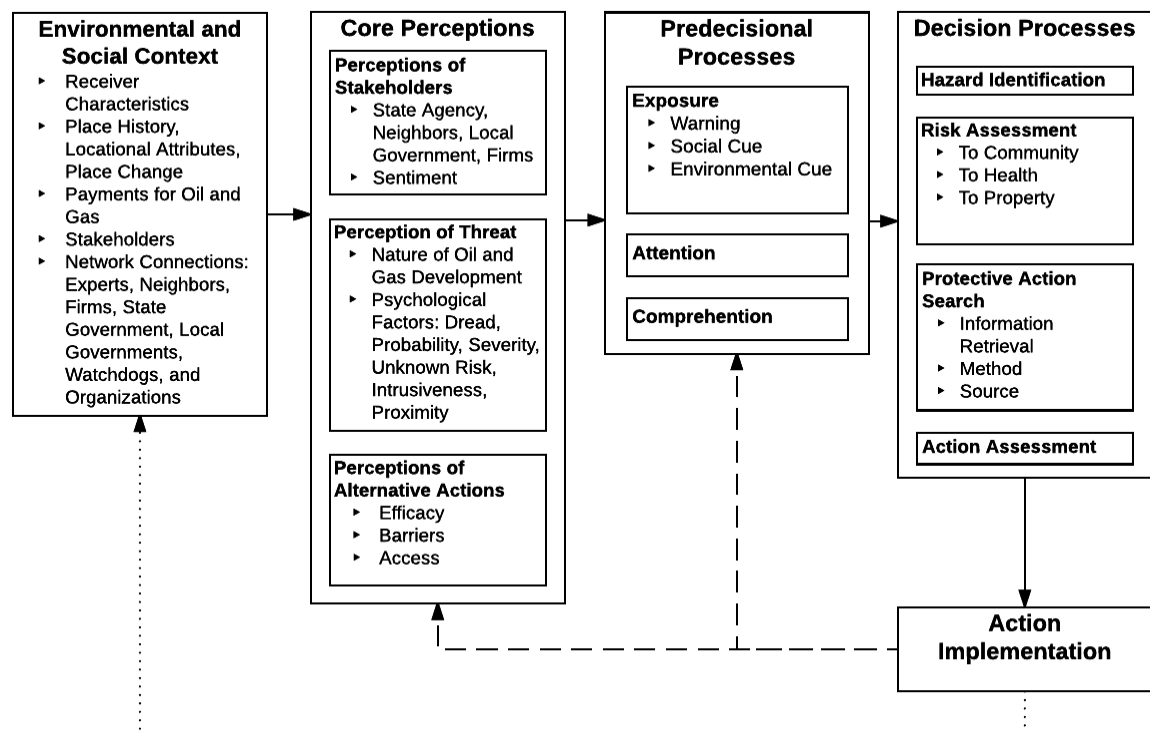


Figure 1: Protective Action Decision Framework. Adapted to oil/gas context from Lindell and Perry (Lindell and Perry 2012).

This complaint process includes a series of pre-decision, psychological, and engagement processes that culminate in the filing of a complaint and the response of citizens and firms to that complaint or the implementing of a protective action (Figure 1). As applied to oil and gas

development, not only at issue is what motivates citizen complaints, but how local governance can citizenry shape the process of citizen complaints.

Institutional arrangements or the rules in use that govern action as well as specific policy interventions can not only matter for what actions are available to citizens, but they ultimately define the context for the decision, can promote changes to how threats and alternatives are perceived, or can enhance/inhibit a person recognizing a hazard as a legitimate threat. Thus, institutional rules, or policy actions, have the potential to affect hazard decisionmaking within each and every stage of the PADM.

What aspects of the protective action decision model are the most evident drivers of complaint behavior and how do policies enacted by governments and firms shape the PADM stages? In this paper I apply the variables defined by the PADM to the citizen complaint decision process. In doing so I provide evidence about how oil and gas perceptions translate into individual civic actions. I focus on each of the main elements from the PADM, those being Environmental and Social Context, Core Perceptions, Predecisional Processes, and Decision Processes. I then evaluate how the decision to enter into a complaint affects perceptions regarding the efficacy of complaining. Finally, I evaluate how policies enacted by the state, local governments, and companies interact with each of the model stages.

METHODOLOGY

3.4. Connecting Protective Actions to Engagement

To select cases, I apply pathway analysis— a method for utilizing quantitative studies to inform qualitative design of studies about the pathways that may link various causal processes

(Weller and Barnes 2014). Weller and Barnes approach is hypothesis generating, ie: the goal of the methodology is to suggest potential causal pathways rather than to verify the existence of causal pathway. As such, this paper generates hypotheses about what motivates citizens to engage in governance via complaining, and how the adoption of management practices aimed at addressing citizen concerns potentially impacts this process.

The respondents for the sample were selected from individuals who had filed complaints with the Colorado Oil and Gas Conservation Commission (COGCC) and had at least partially complete mailing-address information (COGCC 2017). Using roughly 10000 well locations and 2900 possible complainants I categorize observations of complaints and matched wells based on covariate measurements from Scott 2016A, maximizing similarity and differences between conditions on complaints for pairs of observations to create a dataset with large variation in the key variables under study.

While the COGCC database was useful for selecting responses, it did not provide information on perceptions and actions promoting the behavioral response of filing a complaint. Thus, though these were key variables of interest, because other covariates involving wells and neighborhood demographics were available, wells and complainants were selected on firm engagement actions and characteristics of complaint wells (Scott 2017A). Purposively sampling on these variables, I selected 18 complaint cases and mailed written letters to those complainants. The letters included a web address, phone number, and email address to which they could choose to schedule a semi-structured interview (Appendix). When respondents did not respond within 10-days, a follow up letter was sent to the same address. If a response was not received, the address was first reverified and if a valid address was not identifiable on the COGCC website or

from another public data source maintained by the State of Colorado the author selected a new complainant case.

The initial goal was to complete 18 interviews. A total of 65 complainants were targeted with first and or secondary follow-up letters. 19 out of these 65 resulted in a scheduling of an interview. 14 contact letters were returned as undeliverable. In three cases individuals formally refused interview requests due to dissatisfaction with previous research projects. Because two planned interviews were later canceled, I conducted 17 interviews the overall rate of interviews to targets was thus 26.2%, with a refusal rate of 3.2% and a contact rate of 29.2% (The American Association for Public Opinion Research 2016). The interviews were conducted in two one-week periods in August and October of 2016 with in-person interviews conducted as possible and three completed over the phone. Complainants were generally met at their homes, though in two cases interviews took place in public meeting rooms.

In all but one case (where a recording was not allowed), interviews were recorded and transcribed using a first-stage machine transcription via the Voicebase Online Web Application which was then vetted and corrected by the primary researcher. I then coded transcripts alongside documents retrieved from the Colorado Oil and Gas Conservation Commission (COGCC) website describing firm actions and the complaint process.

PADM Coding

Transcripts, documents, and other textual resources were coded for variables identified by the Protective Action Decision Model (PADM) (Figure 1 and Appendix). During coding, additional secondary codes were developed to help clarify relationships underlying specific

variables from the framework. The coding and data analysis were conducted in the computer assisted qualitative data program Dedoose.

For each interview, the primary coder read through the interview script and assigned codes to the conversation that reflected environmental and social context, core perceptions, pre decision, and decision processes. Because the semi-structured interviews were not designed to specifically fit the PADM but were instead developed to identify individual histories with oil and gas developments and experiences with the complaint process, codes to various elements of the PADM could occur via multiple prompts. For example, individuals were asked about the history of oil and gas in their region, proximity to the nearest wells, and events or experiences that led to them complaining. There are a few implications of this for the analysis that bear consideration. First of all, the codes applied to discussions of past experiences with oil and gas and not future actions with oil and gas development which is different from many previous applications of the PADM (Sorensen, Shumpert, and Vogt 2004). While individuals were asked about the likelihood of future engagement with oil companies and their perspectives ongoing development, the timing of the interviews in the Fall of 2016 coincided with low oil prices and very low rates of oil and gas drilling meaning most interviewees experienced drilling impacts previously but were not currently experiencing impacts.

To identify areas where the coding regime was especially unclear or subjective elements in coding of the PADM may have driven results, I include an interpretation of subjectivities within the discussion. The subjectivity analysis was generated by training a second coder to analyze the dataset using the codes. The coder completely coded a transcript at which point the primary coder and the secondary coder met and discussed areas of confusion. We then conducted

a coding test, where the secondary coder coded excerpts which were unitized by the primary coder (Campbell et al. 2013). Intra-rater pooled Cohen's Kappa was relatively low on a single interview at 0.42 demonstrating moderate consistency in coding after a two-month period between initial and second coding (Appendix Intracoder Report) (Landis and Koch 1977). However, the follow-up test was done on pre-defined units which biased the coding towards applying more codes as opposed to a first and second round coding of the entire interview document. When comparing a single transcript coded by both the primary and secondary coder at the sentence level of unitization, intercoder agreement is 0.82. However, in working through Campbell's proposed chunking exercise on these data, Cohen's Kappa was only 0.18 which suggests that a secondary coder would require significant training to replicate these results.

RESULTS

Environmental and Social Context

Receiver Characteristics: Who files complaints?

Table 1: Basic demographic information on respondents.

ID	County	Relation to Location	Gender	Occupation	Town	Retired	Engagement Practices	Multiple Complaints
1	Weld	Nearby Resident	pair (female led)	Clerk	Mead	T		T
2	Weld	Mineral	female	Farmer	Uninc.	T		T
3	Weld	Nearby Resident	male	Lawyer	Firestone			T
4	Weld	Mineral	pair (female led)	Teacher	Windsor		T	T
5	Weld	Nearby Resident	female	Veterinarian	Erie		T	
6	Weld	Nearby Resident	pair (female led)	Author	Windsor			

7	Garfield	Surface	male	Farmer	Uninc.			T
8	Weld	Nearby Resident	female	Organizer	Mead			
9	Garfield	Surface	pair (male led)	NA	Uninc.	T		T
10	Weld	Nearby Resident	male	NA	Mead	T		
11	Weld	Nearby Resident	male	Engineer	Mead			T
12	Huerfano	Surface	female	Business	Uninc.	T		T
13	Garfield	Nearby Resident	pair (female led)	NA	Battlement Mesa	T	T	T
14	Garfield	Mineral	male	Farmer, Oil, Logging	Silt	T		
15	Weld	Nearby Resident	female	Business	Windsor		T	
16	Garfield	Nearby Resident	female	Teacher	Battlement Mesa	T	T	T
17	Garfield	Nearby Resident	female	Farm	Silt			

Basic demographic descriptors for interviewed individuals are presented in Table 1. In terms of mineral ownership, three residents possessed mineral rights, and three possessed surface rights only, meaning the remaining eleven respondents were nearby residents. However, one of these individuals owned mineral rights at a well different from the well about which he filed a complaint. Approximately half of the people I interviewed were retired. Employment was reported as connected to individual network connections and actions taken in regard to oil and gas. For example, the lawyer, two engineers, and a community organizer all expressed to me how their employment mattered for their interactions with oil and gas companies and ultimately shaped their perspectives on development—a finding supported in previous research on complaints (Dong et al. 2011; Weersink and Raymond 2007). Citizens self-select themselves into

the complaint forum. Given this, barriers to accessing the complaint process likely altered who was able to complain. Even the mere process of filing a complaint required immense effort, and as one complainant said,

“It was not user friendly to file a complaint I mean they really don’t want you to complain and they don’t make it very easy and the theory is if you are upset enough and it is bad enough you will go through the process.”... (Interview 4).

Individuals who responded to the call to participate in the research were not only able to navigate the Colorado complaint system, but they were furthermore willing to take 60 to 120 minutes to discuss their issues— as a result these individuals generally had very strong opinions regarding the impact oil and gas development had on them personally.

Place

The individuals interviewed lived in incorporated and unincorporated areas of three counties— Weld (9), Garfield (7), and Huerfano (1). Individual sense of place was pivotal in descriptions of oil and gas in their regions. For individuals who were not farmers, the most common descriptor of place was as “neighborhood,” with all non-farming individuals mentioning the word neighborhood explicitly in their response. For individuals in Battlement Mesa, the fact that it was a retirement community was an important defining factor of place. Potentially because of the blended land use of Weld County, individuals in Weld County referred to both farms and ruralness as well as subdivisions— this reflected a changing understanding of place. Each individual recognized increased growth both as a result of gas and as a process that co-occurred alongside oil and gas. There was not a perspective that oil and gas was not a part of the place or should not be a part of the continuing definition of Colorado as a place. However, two interviewees felt drilling for oil and gas was moving backwards in terms of developing

energy resources. Every other respondent reported that the development of oil and gas in Colorado was important. This does not mean, however, that they supported it in the immediate vicinity of their neighborhoods.

Network Connections: Who did complainants engage with?

Everyone who engaged in the complaint process mentioned firms and state governments as stakeholders at oil and gas sites or in oil and gas policy in general. For most individuals these were the major network connections that shaped response. Additionally, 13 individuals described connections to local government officials in some capacity, and 12 individuals described connections to neighbors. Connections to nongovernmental organizations were relatively rare—only five individuals reported connections, with those being primarily to local concerned citizens groups including the Western Colorado Congress and some hydraulic fracturing focused groups such as Food and Water Watch. Only five individuals reported network connections to news agencies or other watchdogs while four individuals reported connections to experts. Six individuals worked directly with lawyers in addressing concerns at sites and reported lawyers being an important stakeholder in engaging companies at sites.

For individuals who were new to Colorado or who lived on split-estate properties, all but one referenced realtors and/or developers who either held onto, sold-off, or failed to share information on mineral development plans as important stakeholders.

Firm Engagement Policies

At five of the studied wellsites, companies had adopted best management practices by which firms agreed to use some sort of community engagement via either accepting comments

on permits or drilling plans, conducting consultations with local government officials, via meetings with local landowners, or via notification of local residents about drilling plans (Figure 2).

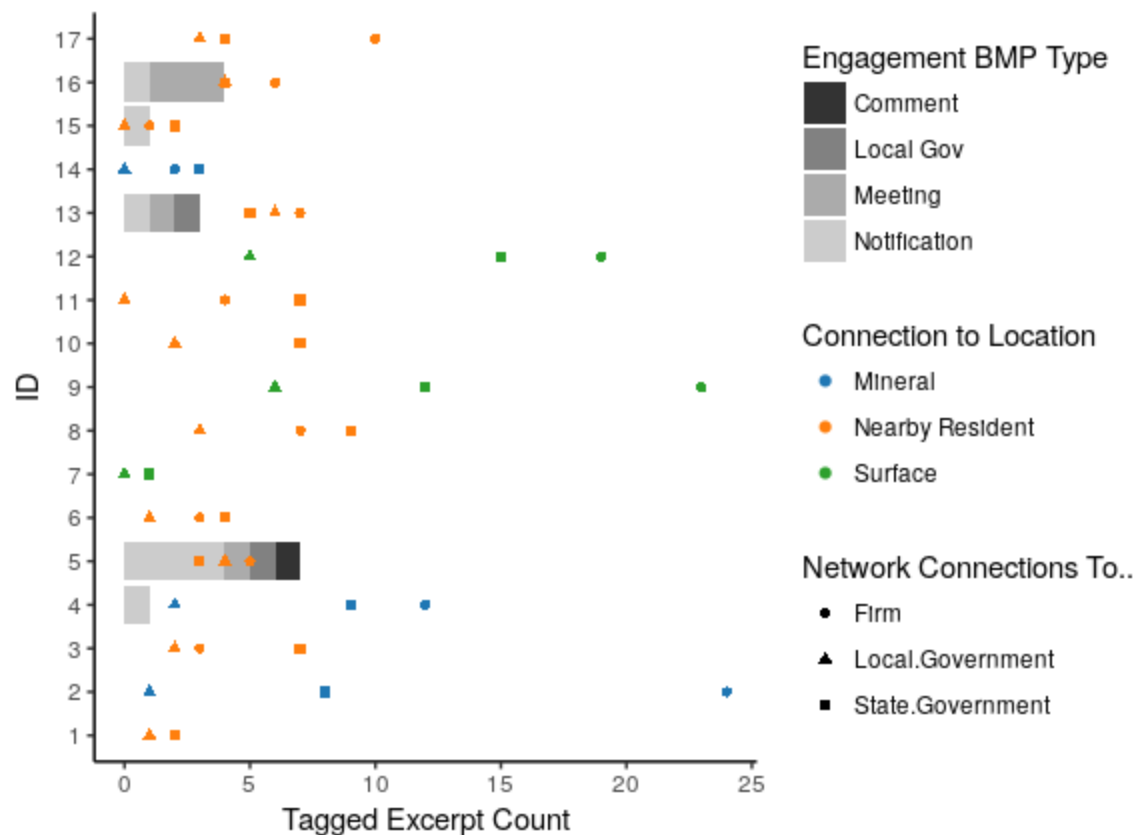


Figure 2: Policies in place at wellsites promoting community engagement via permit documents in relation to the Respondent ID, the kind of BMP adopted, the complainants connection to the oil and gas location, and the tagged excerpt counts for network connections between citizens and public stakeholders.

However, there is no evidence presence of such practices increasing reported connections with the State oil and gas agency, local governments, or operating firms based on the sample here (Figure 2). These official policies were less indicative of engagement than of the property rights connection of complainants to the location where the complaint occurred (Figure 2).

Of the complainants I interviewed, residents who were not notified by firms suggested that their entire experience with oil and gas would have been improved had there been adequate warning drilling was slated to occur. However, at the sites where policies such as notification were used to address risks, a surprising finding was that for two of the sites where such practices were adopted, the complaining residents lived just outside the notification boundary for pre-drilling notifications thus preventing them from achieving the benefit of the policy. Notification rules often specify a set perimeter of where notification should occur, for example,

“Prior to commencement of any new drilling or completion operations, provide notification to landowners within one-half (1/2) mile of the well-site.” (Location Info Withheld).

This firm parameter means residents 2700 feet from a well-site would not receive notification. While 2700 may sound like a fair distance, what counted as proximate to oil and gas wellsites was dependent on the individual respondent. Furthermore, not indicated in Figure 2 is that a review of documents at wellsites indicates the fact that policies such as meetings and official commenting provisions are more common when companies are drilling within established municipalities where they have signed memorandums of understanding with local cities that suggest additional voluntary mitigations companies should adopt.

For a number of the complainants of concern was the fact that while the complainants lived within city limits, companies can drill for oil from just outside of the city limits— this practice was especially prevalent for wells in Weld County (see Ch. 3B for Continuing Discussion).

5.2. Core perceptions and citizen complaints

Perceptions of the threat

While a two complainants thought that developing oil and gas resources was a bad idea overall and that renewable resources were a better option, most openly recognized that oil and gas resource development can lead to a productive economy while protecting national security. Three individuals did not discuss development near homes as problematic, two others rejected development altogether as supporting old energy technologies as opposed to new technologies. Outside of these five individuals, the rest of the sample (12) expressed that development should occur but it should not occur immediately next to homes, schools, and water sources. For these individuals, expressions of necessity or benefit of developing oil and gas were juxtaposed to individual perceptions regarding potential for local harms (Table 2).

Table 2: Sample of excerpts describing need for oil and gas development alongside opposition to oil and gas development locally

Excerpt Example
“I understand you need oil or you know I need but we need this understand that and I even support it but... it has to be environmentally friendly it has to be people friendly and it's... I guess that's a hard balance.” (Interview 11, 9944)
“We've always said that we're not against drilling for oil and gas because we know that's a necessity and we use it but we just don't think that inside a neighborhood is an appropriate place that's that's our main argument.” (Interview 17, 10833).
“If they want to frack I don't think they should be doing it in neighborhoods and so I don't find any benefits to that. Now, is this going to help bring the cost of oil and gas down? Yeah I'm all for that and a lot of people in this neighborhood also work for Halliburton and some of those people have lost jobs because of the price of oil going down, but I'd be more concerned with the health risk....” (Interview 10, 10051).
“Well I think as a country we need to to (produce). We do have oil and gas. That we can become self-sufficient and instead of relying on foreign countries for oil and stuff like that. And it's something that

I think is needed, but what I'm wondering is do they have to be so close to public housing and stuff? Does it have to be right in somebody's backyard? That's the question.” (Interview 6, 14306).

“It's hard to be anti-oil when you have a car and you know you know you have things that are made of petroleum. It's a Catch-22 but, if I were to make the world better I would have some alternative sources.” (Interview 5, 24688).

Psychological Threat Factors:

While the PADM suggests that uncertainty, dread, probability, intrusiveness and severity are key in determining threat perception, I found descriptions of how oil and gas intruded on individual lives predominated, with citations of dread risk, descriptions of severity, and comments on the unknowability of risk also occurring but not with the same consistency across interviews (Figure 3).

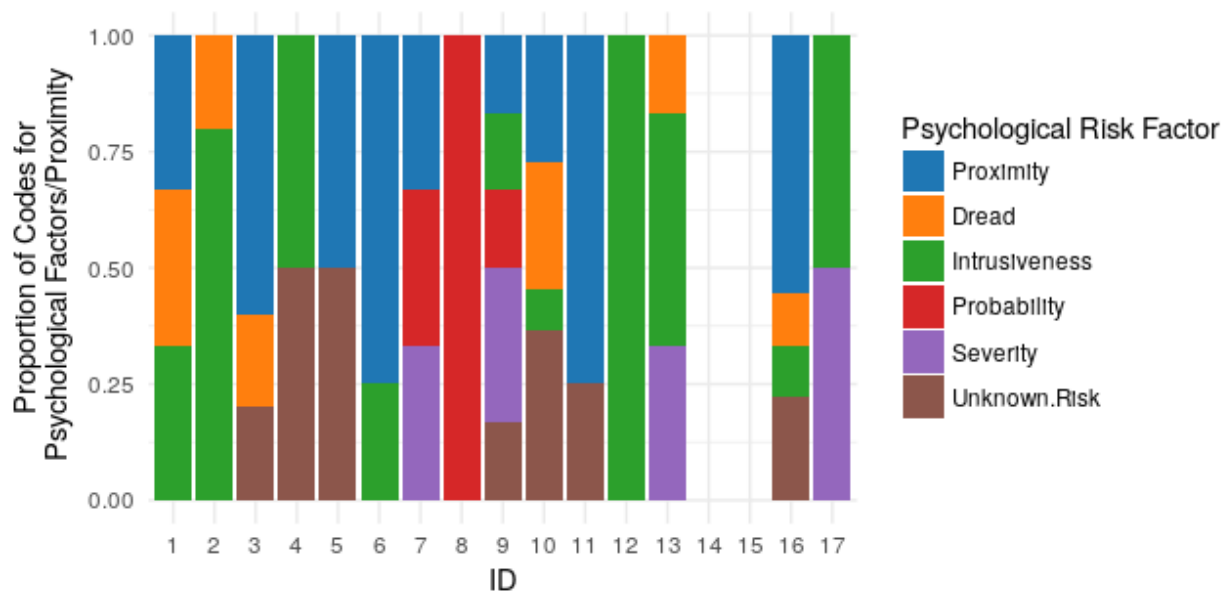


Figure 3: Psychological risk factors and proximity referenced in relation to local oil and gas development. All factors cited are scaled to sum to one for each individual.

Ten respondents reported how oil and gas development disrupted their day-to-day life or required full-time effort to monitor and prevent wrongs.

“During the time of this (Company Name Withheld) deal and everything I was... I was really mentally going nuts and the noise and not being able to sleep... because of the noise and the rumbling the low freq., low frequency vibration and I remember one night like it was intermittent... it would run for about five minutes and stop for thirty seconds.... And I just I couldn't find a place in my house to sleep without feeling that vibration and one night it stopped. And it was like whoa... thank God. I just fell asleep and here comes that rumbling (in) fifteen minutes. That's all the sleep I got that night and I called (Company Name Withheld) the next morning... (Interview 2, 65402)

For others, the odors were unbearable and disruptive, “It was literally so bad [company] put us up at the Holiday Inn” (Interview 9, 37424), one complainant observed. Notably, descriptions of the risk or externality were described in terms of how the noise, smell, or action impacted the normal life of the respondent— preventing sitting on the front porch or watching TV at a normal volume, though in other cases respondents reported complete disruption to the normal schedules of life. One surface owner who lived off site told me about the property damage occurring:

“It's been a full-time job the last three years, a full-time job. It takes me two hours to go down there and some of the people aren't happy when they see me down there but you know I've had a hard time with with the their people” (Interview 12, 30721).

For citations of intrusion, the limited timeframe for drilling did not matter so much as the fact that oil and gas development disrupted day to day activities.² Citizens recognized that the impacts of drilling were temporary; however, the intrusiveness on daily lives mattered for citizen willingness to complain, and it was a predominant feature in descriptions of specific events that

² While sound and vibration impacts were generally seen as passing, odor complaints have an ability to persist throughout the production phase, and were not necessarily seen as temporary.

occurred just prior to complaints being filed (Figure 4). Among the risk perception variables from PADM, it was the second most-frequently described threat description just prior to citizen description of complaint actions.

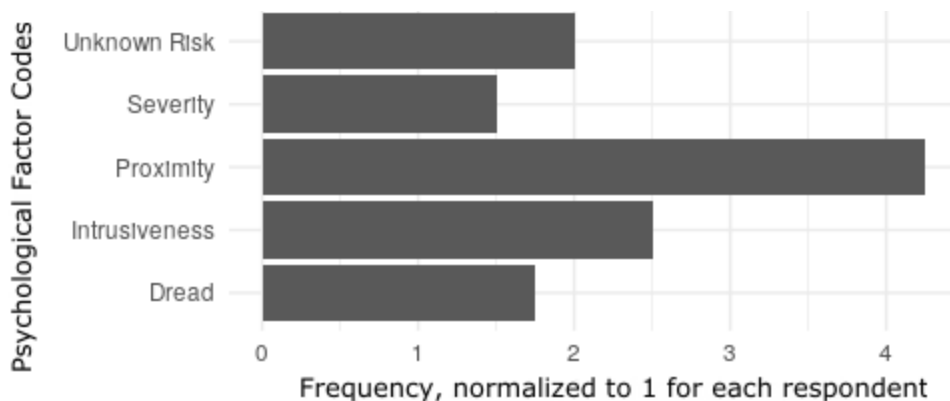


Figure 4: For each excerpt where a citizen described the action of filing a complaint (action implementation), the relative frequency (such that each interviewee's total count is normalized to sum to 1) of each psychological element being discussed within that same excerpt. Or, if no psychological factor was discussed within that specific excerpt, the factor in the text of the transcript most proximate to the description of filing a complaint.

Proximity was the most obviously traceable factor leading to a complaint about a specific well compared to neighboring wellsites for the basic reason that increases in distance from a well allow greater sound dissipation, reduce the chance of noise or light disputes, and effectively eliminate the potential for reportable property damage. Compared to the psychological factors studied, residents discussed proximity most frequently just prior to describing the act of complaining (Figure 4). While less impactful for surface owners who lived away from the property where the impacts were felt (three respondents), for those with noise, odor, and vibration complaints, *proximity* was the key descriptor in terms of perception of a threat. However, what counted as “proximate” varied greatly.

“I’m a half a mile from two well pads over here actually three well pads and I could hear it and I can smell it. So that’s not, that’s not very far but I also asked panel members is you know if you lived within five hundred feet of the well would you be happy with that? I can’t see how anybody could be happy having a well pad five hundred feet from your house you’d be impacted in so many ways” (Interview 16, 20694).

One resident had wells a mile away which were described as proximate while another had wells as little as 200 feet away from their back-porch— in both cases these were described as proximate.

Predecision Processes

Attention and exposure to threat

While individuals took a variety of actions in response to oil and gas development ranging from emotional coping methods such as doing puzzles (one respondent) and going on night walks (one respondent) to moving to new homes (two respondents) or sleeping in basements (three respondents), here I focus specifically on how exposure to oil and gas development impacts led to the process of complaining and how the pre decision processes potentially shape the decision to complain. One challenge faced in applying the PADM by previous scholars is that the predecisional processes of exposure, attention, and comprehension are generally indistinguishable in practice even if they are intended to represent different stages of the analysis process. Moreover, in retrospect, citizen perceptions of oil and gas are given in light of their experience with it— the perceptual elements above were critical for what occurred throughout the pre-decision process and for motivating citizen-filing of actual complaints.

For the majority of respondents, proximity, which I coded as driving perception of the threat, was key in establishing citizen attention and was the primary manner in which oil wells were described. About oil and gas one respondent stated,

“It’s been going on for awhile but it didn’t really, it’s kind of like until it’s in your own yard you don’t really pay attention to it” (Interview 4, 933), and, “It wasn’t happening in the area I was living in and I really didn’t start getting involved until those signs went up across the street. That was kind of an eye opener for me.” (Interview 10, 22235).

Residents who did not discuss the wells they complained about in relation to proximity (3) were surface owners who lived off-site resulting in proximity being less important to those individual respondents. Proximity also matters because the primary exposure to oil and gas came via a combination of environmental cues (a combination of sights, smells, sounds, sensations) rather than social cues. This was common across all kinds of complainants regardless of status as a surface owner, mineral owner, or nearby resident (Figure 5).

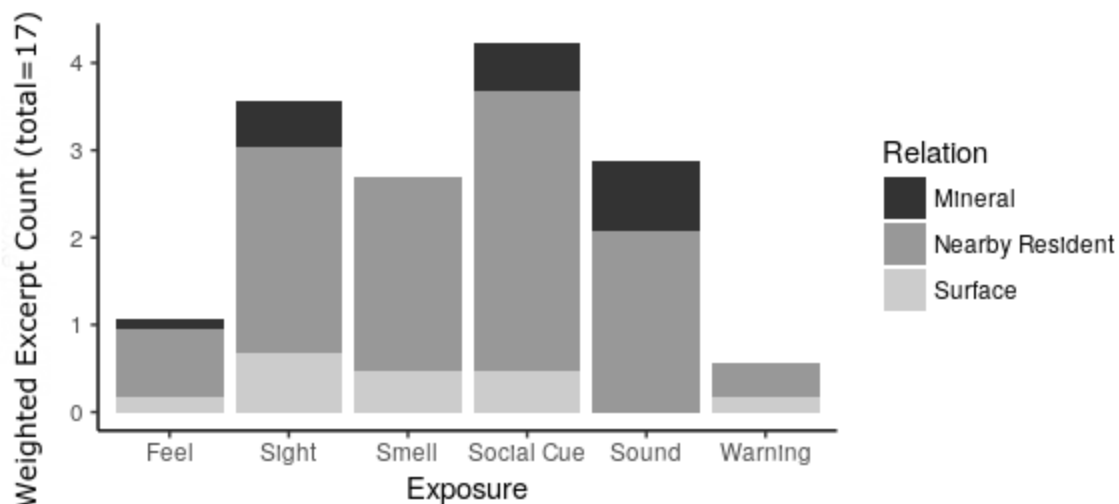


Figure 5: The relative frequency of exposure cues, scaled such that each respondent has a total cue height of one regardless of the number of exposures that respondent discussed. By summing each respondent to 1, the unit of analysis is fixed at the respondent level not per exposure.

Individuals described numerous exposures to the risks of oil and gas development via environmental cues, social cues, and warnings. News from neighbors or warnings from official sources sometimes corresponded with these environmental cues, but none of the individuals I interviewed filed a complaint without some sort of environmental cue to do so. When individuals undertook the action of complaining, the exposure cues most commonly preceding the specific act of complaining were seeing, hearing, or smelling some sort of impact of oil and gas (Figure 6).

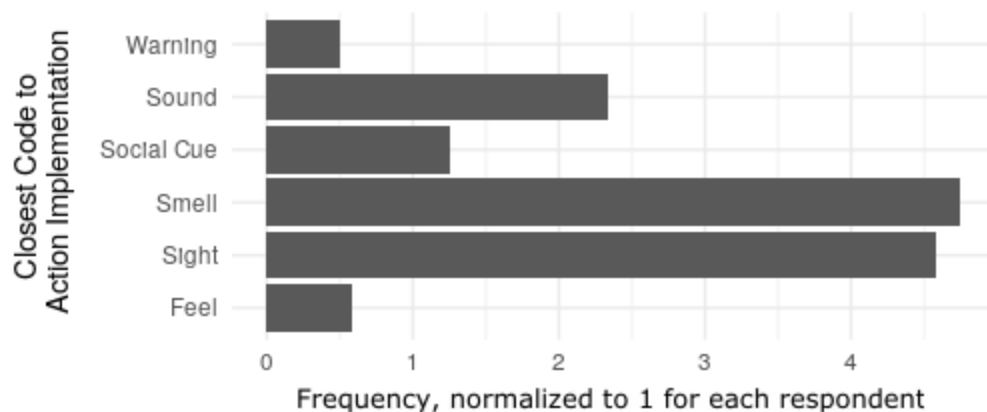


Figure 6: For each excerpt where a citizen described the action of filing a complaint (action implementation), the relative frequency (such that each interviewee's total value sums to 1) of each exposure cue being discussed within that same excerpt. Or, if no exposure cue was discussed within that specific excerpt, the most prior exposure in the text of the transcript most proximate to the description of filing a complaint. By summing each respondent to 1, the unit of analysis is fixed at the respondent level not the filing of each complaint.

For many individuals, more than one cue was identified. Individuals reported both feeling and hearing impacts of oil and gas development, for example,

“It'd be like you can lay down in bed and feel/hear it and then if you get up you might not.” (Interview 3, 10473), or, “You know my house is rattling the shop was rattling my windows I couldn't sleep because of the vibration and the noise.” (Interview 2, 43496).

The kind of cues citizens encountered exposing them to oil and gas impacts also conversely mattered for the kinds of psychological factors citizens discussed around risks. Unknown and dread risk, while discussed by some residents (seven and six respectively) were not commonly direct motivations for complaints, but were cited as they related to health risks or risks to water resources. In one instance, an individual complained about water leaking from a site they feared may have some unknown chemicals. Unknown elements of hydraulic fracturing or the threat of future technological disasters were used to discuss the threat of drilling for oil in gas in general or past complaints that were not remedied.

Decision Processes

Hazard Identification and Risk Assessment

Once exposed to a risk, individual complaints were discussed most often in reference to health and property threats rather than threats to communities (Figure 7). Thus, while oil and gas development was discussed as a threat to community overall, oil and gas proving a threat to the community was rarely an assessed risk motivating a complaint except in the case where mud on a road was described as endangering other members of the community who may not know it was there.

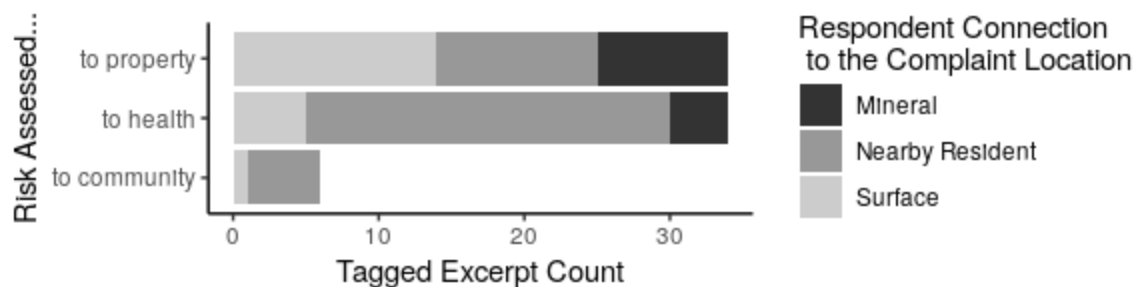


Figure 7: Frequency of each excerpt count relative to the kind of threat and the respondent connection to the complaint. Property and health risks were both cited 35 times. This figure reflects cumulative excerpts not weighted excerpts.

None of the individuals I talked to complained to fear for children, families, or significant others. Instead, individuals described risks as primarily accruing to themselves, something that may have stemmed from the life stages of interviewees as few had children living in their homes and where spouses were involved they often sat in on the interviews. These resident risk assessments were not independent of context—the identity of the complainant mattered. Notably, surface owners and mineral owners were most likely to cite damages to their own property and least likely to cite risks to community as a rationale for complaining—this included in both general perspectives on how local oil and gas was threatening residents as well as the specific event that motivated a complaint (See appendix). While all groups cited health, nearby residents cited health risks most frequently as a rationale for filing a complaint.

In terms of the ties between cues and the assessment of a risk meriting protective action, visual and social cues were associated with assessed risks to property while odor and social complaints were associated with perceived threats to health. Within the description of the social cues, sound complaints were unique in that they were only sometimes assessed as major threats to health, community, or property. In a few notable cases, sound was described as a nuisance but not necessarily as a threat. For example,

“Because we could be inside watching T.V. and have to turn the T.V. up to blare out the noise from the fracking. And you can hear how quiet it is here.” (Interview 4, 4507)

However, this nuisance was enough to merit individuals to file a complaint.

Protective Action Search

Deciding to Engage: Taking Protective Action

The individuals I talked to were not, except in one case, aware of the potential for filing a complaint until *after* they had observed some sort of cue motivating attention and assessment of a hazard—citizens were not seeking a cue in order to file a complaint but instead described filing a complaint as an option they identified as a potential remedy to events impacting their lives. The only exception in my dataset is one complainant who,

“... had already heard about that option from other people in that Facebook group because other people had already filed noise complaints” (Interview 5, 24194).

For a surprising number of individuals, complaining was described as an action of last resort. Respondents did not like complaining—complaints were only filed once impacts intruded on their daily lives and a threat had been assessed.

The primary sources for identifying complaining as a potential option were online search and social connections to either informed neighbors or community organizations, companies, or governments (Figure 8).

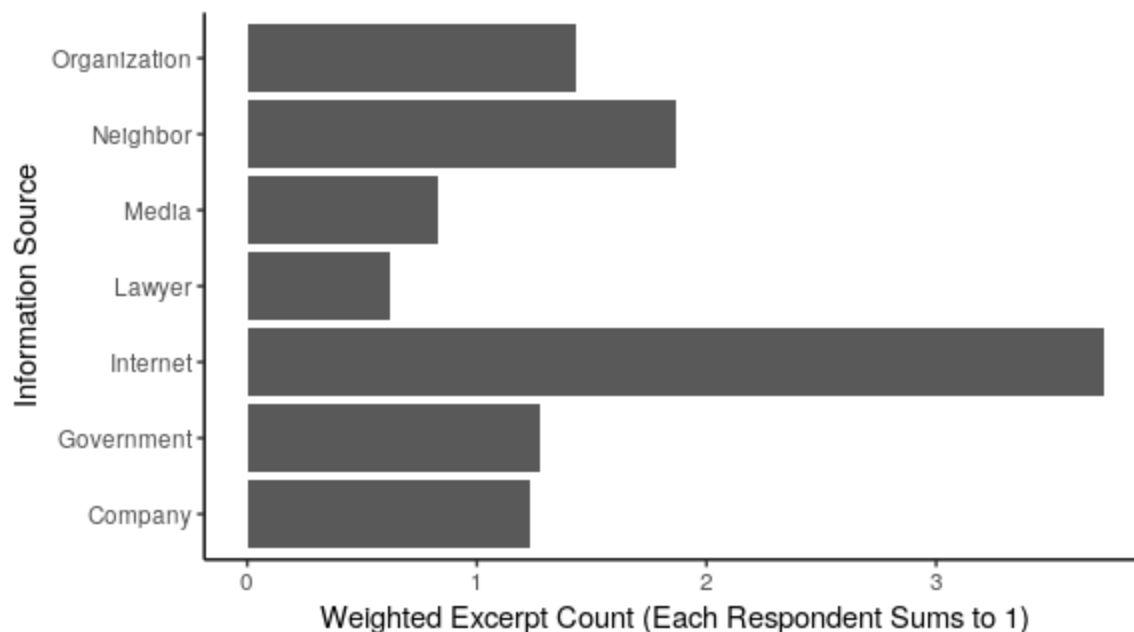


Figure 8: Weighted excerpt counts indicating where individuals accessed information about how to complain. Each respondent is rescaled so the total count of excerpts from their interviews equals one. Only individuals who reported a source are included.

Individuals engaging the COGCC website (which was coded as using the internet) to complain reported increased awareness of regulatory rules and the option to complain when those rules were violated.

“I remember having to do the dive on the website the dig I should say and then and yeah and once we found the gentleman that (omitted) was referring to and he also and we got in touch with the rigs” (Interview 4, 11045).

Community groups, formal or informal, played a major role in informing citizens of actions. Concerned citizens groups were major conduits of awareness of actions as were informed neighbors and lawyers. In fact, the border between neighbors and concerned citizens groups was often hard to disentangle— a Facebook page for the local community is not an organized 501(c)(4) or 501(c)(3) for example, but may operate in a similar way in mobilizing

citizen actions and lobbying for local government action. In the same way, members of such organizations often are described as neighbors. For example, one complainant told me they found out about the forum when,

“Another person had contacted me. Just a private citizen. ‘Do you realize if there are complaint forms you can submit to Colorado Oil and Gas and show that they are destroying your land and that’s when I did the official paperwork, put in the complaint...” (Interview 12, 17761), “...had this other lady never called me I would have been up to here in mud but with her she’s the one that said (Name), do it, and when someone tells you to do it, you listen.” (Interview 12, 50375).

However, the “private citizen” in question was the member of a 501(c)(3) concerned citizens group. These concerned citizens groups comprise the organizations that informed residents about complaints, not national or even Colorado-wide interest groups. The groups not only mobilized citizens to complain when they found something amiss but provided administrative/and or technical support in doing so. In Battlement Mesa, a Planned Unit Development in Western Colorado, the local concerned citizen group maintains its own complaint process which streamlines the contacting the State about issues. The group also provide guidance about what kinds of impacts to describe to the State.

Filing Complaints: Protective Action Implementation And Feedback

Once individuals complain about a risk, the efficacy of that action is interpreted in regards to the perceived efficacy of alternative actions— the PADM builds in feedback such that the act of complaining shapes future decisions about protective actions that may be taken. Thus, the efficacy of complaining matters not only for whether an individual complains again but also the other protective actions they may adopt.

Respondent reasons for why complaining was not effective included bias on the part of regulators, lack of effective communication between regulators, companies, and citizens, and lack of understanding of issues faced by residents at gas sites. Fourth, complainants identified time lags in responding to complaints— noise complaints and sound complaints could often only be investigated after the initial complaint process. This does not mean citizens did not see a usefulness in filing complaints. Rather, citizens expressed filing complaints was an important process variable, helping them to improve outcomes by creating a record of firm actions and involving regulators in the local management process.

Process and complaining

Of the complainants in the sample, fewer than half had complaints that led to official violations. Nine (of the 17) complainants described how filing a complaint led to changes on the ground in terms of addressing the concerns they had about sites. While expressing some dissatisfaction with sites, six different respondents described the process of complaining as critically important even if it did not help to address their concerns. Mineral and surface owners in the sample were more likely to suggest that their interests had been addressed via complaining than nearby landowners were. Residents who lived in areas where firms adopted community engagement and notification practices were more likely to suggest their interests had been addressed via complaining (Figure 9).

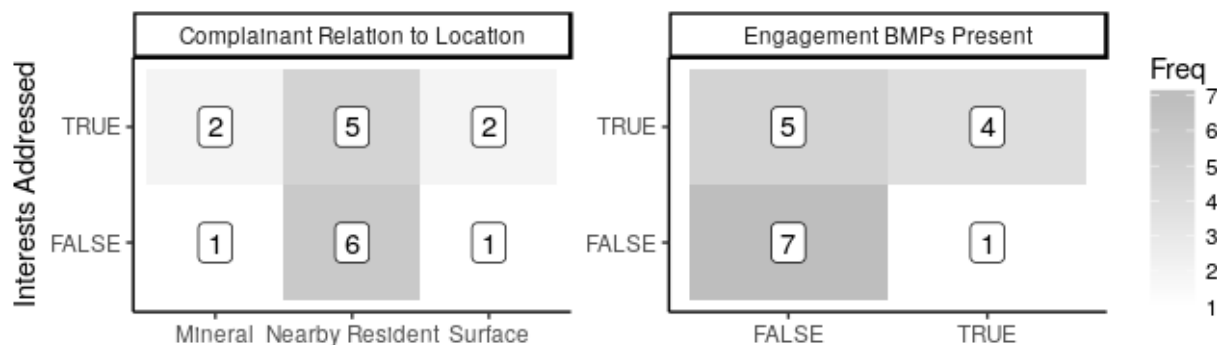


Figure 9: Binary counts of whether respondents expressed their interests or specific requests of the firms were addressed via complaining, binned against property rights (left) and the presence or absence of engagement BMPs (right). Engagement BMPs tended to be associated with more more of resident interests being addressed, while mineral and surface owners also had more of their interests addressed relative to residents.

Of the four cases where residents expressed their interests were met via complaining and where engagement practices had been adopted by the firms in question, in two complaints were used to provide evidence within the resulting engagement process. In one case, a group of complaints from nearby residents led to a well being shut down after residents were mobilized via engagement processes. In the final case, there was no clear tie between engagement practices and the remedy of the complaint—the company had simply violated rules. However, the first three of these cases demonstrate that complaints not only can provide evidence for regulators but they can be leveraged by citizens as a method of achieving change and recording concerns. Notable within these responses was a recognition that complaining about oil and gas was part of a process. Rather than existing in isolation, each complaint formed part of a record indicating the impacts local residents faced at sites (Table 3).

Table 3: Residents described complaints as a process— each complaint was not classified as an isolated event but instead complaints were seen as cumulative in ensuring outcomes improved.

Excerpt Examples

“You get to the point where you are going through the motions you're like I know this isn't the way to do it. I'm going to do it this way so that the complaints are recorded.” (Interview 17, 47444).
“Every call I made, every email I went was a good thing because it was on their radar.” (Interview 8, 30514).
“It just means it is recorded so at least a record of it makes it trickier...” (Interview 13, 47160)
“So it's a it's a hard balance it really is and there were times when I was communicating with the gas commision that I felt like oh you're just being *****, but it was more than that to me. It was I really need you to do something... I really needed it for the next people... you gotta understand it's important” (Interview 11, 10229).

This perspective that complaints were part of a larger process meant that citizens who were actively engaged with companies and governments in managing oil and gas continued to file official complaints, even if they did not perceive the complaint forum as effective in addressing their interests. While a few residents ceased complaining due to a low perceived efficacy of the complaint process, these were generally residents who were not otherwise engaged with the companies. For others, efficacy could mean having interests addressed, or, it could mean making an official record of the harms oil and gas had caused for them. This may have contributed to 10 of the 17 individuals I interviewed filing multiple complaints. This included both individuals who felt the complaint process was effective and ineffective.

Perceptions of Firms, Governments, and Other Stakeholders

While PADM identifies perceptions of firms, governments and other stakeholders as well as connections to these stakeholders as critical for protective action decisions, individuals perceptions of these actors were shaped by the complaint process because it was a part of how citizens developed their perceptions of these actors. Sentiments about the efficacy of complaining meanwhile completely intersected with sentiments about the state agency— most

individuals I interviewed felt COGCC was slow to respond to issues, potentially biased towards oil and gas, and failed to really hear citizen concerns. In a few cases, COGCC was described in a heroic manner (2), but in both cases the complaints involved clearly demonstrable violation of land use agreements. Across both the groups of residents who had their interests addressed or not addressed, the complainants I interviewed more frequently held negative perceptions of firms than positive perceptions of firms (Figure 11).

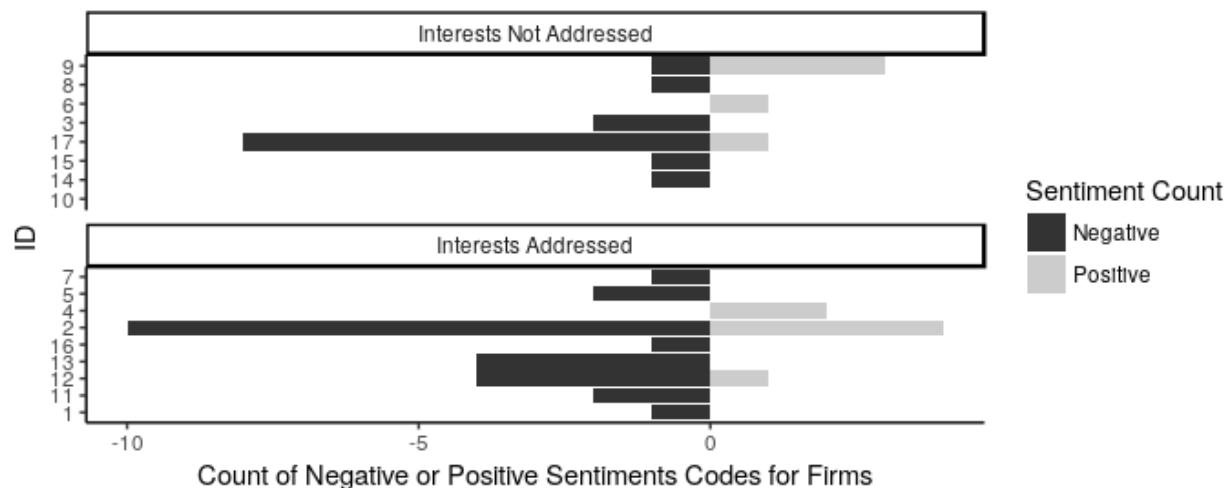


Figure 11: Excerpt counts of sentiments about firms across groups that had their interests either addressed or not addressed via filing a complaint.

What does not show up in Figure 11 is that the positive sentiments about firms either referred to individual actors who worked for firms (such as specific employees or managers), or, the positive sentiments were used to describe firms that replaced initial firms. In each case where a well changed ownerships, residents perceived the second-firm that they engaged with at oil and gas sites more positively than the first.

DISCUSSION

Applying the PADM to citizen complaint behavior provides an important illustration of how perceptions of oil and gas development, sense of place, personal identity characteristics, public policies, perceptions of stakeholders, and perceived efficacy of actions shape the choice of citizens to engage in the complaint process. By complaining, citizens are brought into the operation of government regulation of oil and gas sites. Complaining gave citizens a method of providing firm accountability information to regulators and sometimes, residents had their interests addressed via complaining.

Methodological Subjectivity

Like with any research study, the results here are partially a product of the subjectivity of the researcher— everything from the recruiting of respondents, to the asking of questions, to the analysis of results provides potential for researcher inconsistency to shape responses (Saldana 2015). Here, I focus on where they may have the clearest ramifications. Intracoder consistency was weakest for attention to risk ($K=-.02$), identification of hazard ($K=.26$) and action implementation ($K=.25$). In terms of hazard identification versus attention, these two concepts were generally indistinguishable from comprehension of a hazard and the actual risk assessment process itself. In this area of risk discovery and assessment, the stages of the PADM proved difficult to operationalize without questions targeted specifically at those substages. Accordingly, I did not train the respondent with in great detail about how to distinguish between factors shaping attention, comprehension or identification, but instead approached those concepts as a single process of first being attentive to a risk and second, recognizing it as a hazard. I focused

instead on the kind of hazard perceived. In terms of action implementation, in working with a secondary coder, I found that the low reliability stemmed from disagreement about what constituted a protective action. For example, blocking access to one's property with branches is a protective action (Interview 2, 18439), but, because I was largely focused on complaints as behavior, I may have under-coded actions that were not actions that were explicitly entering into governance. This became evident when working through a complete transcript with a second coder.

In applying the PADM, a critical challenge was that the PADM builds in feedback loops whereby perceptions or threats and stakeholders, pre-decision, and decision processes are all continually evolving based on actions applied or actions that could not be applied. Thus, while the PADM is based on stages of the decision making process, these stages could not necessarily be studied in a time-linear fashion. While I asked residents about changes in their perspectives on development and the potential threat of oil and gas pre and post oil and gas development and pre and post complaining, individuals generally reported their overall perspectives remained unchanged (either in support or against development) or they went from not having a perspective to developing concern about development locally. In relating the act of complaining, respondents talked of complaining as part of a story wherein they highlighted the impacts and specific elements they noticed and how that cue led to actions. As a result, establishing a time-linear model of how complaint perceptions resulted in action was difficult.

Despite these difficulties, because it provides clearly defined concepts in terms of elements that shape action, the PADM was effective for characterizing the suite of factors that led to citizen complaints and it provided a useful analytical framework though not one for which

all concepts were clearly evident within interviews that were not initially designed to elicit PADM-applicable responses. I selected PADM as a framework because it has not been applied widely to man-made hazards and because it makes the act of complaining explicit; however, it would be theoretically useful to code these interviews using another theoretical approach such as the extended parallel processing model or the Protection Motivation Theory as these place less emphasis on the substages of the the decision process (Bockarjova and Steg 2014/9; Witte 1998).

Interpretation and Emerging Hypotheses

Complaining about oil and gas development locally corresponded most strongly with perceiving oil and gas as both proximate and intrusive. These perceptions of the threat were both the result of environmental exposures to impacts and yet they shaped the way citizens engaged the complaint process. Citizens generally did not like complaining— this was a constant sentiment. However, proximity to oil and gas combined with actions that residents felt interrupted their daily activities or normal course of life were key in residents choosing to complain. Oil and gas companies often argue that impacts will be short lived and only during drilling, however, this argument was dismissed within multiple interviews, for example,

“If it takes two weeks to drill and then another couple weeks to frack to do fifteen wells you're talking at least a year of noise. It's a long time to live somewhere with noise” (Interview 6, 19108).

Notably however, this impact was not seen as long-term or tied explicitly to health but it still mattered greatly. Importantly, this suggests that *even where long term impacts are not perceived, the intrusiveness of an event on daily life may be enough to motivate protective action (H1)*. This was especially evident with sound cues as respondents only sometimes indicated these

may have a health risk despite strong scientific evidence noise can be damaging to health (Hays, McCawley, and Shonkoff 2017). Often, they were simply described as an unbearable annoyance without a clearly described connection to a threat to one's health, one's community, or one's property.

While social cues and warnings may influence general perceptions of risk and certainly these exposures matter for whether an individual complains, the people I interviewed complained in regard to specific concerns. These cues were ones which they themselves heard, saw or felt, furthering the implication that personal experiences are critical in motivating actions (Nagele and Trainor 2012). Though this may appear obvious as the complaint forum is intended partially as a monitoring program, the fact that individuals filed complaints primarily after an environmental cue provides evidence that complaints are not filed to create a nuisance (Warwick and Ortolano 2007). Individuals file complaints in regards to specific events they perceive—the perceptions of these events are of course influenced by the wider perception of the threat and relevant stakeholders but based on the evidence here citizen *complaints occur after environmental exposures, not as exposure-less activism (H2)*. However, it is also important to note that not all exposures led to complaints. For most citizens, the network connections which formed part of the context of complaining arose out of other actions taken to respond to events. Citizens who were exposed to a threat and filed a complaint did so after coming to a decision that was the proper step to take.

A consistent result is the assessed risks by residents were perceived as personally-relevant impact rather than one to a person's larger community. Assessed threats to health and property both far outnumbered expressions of threats to community. This finding

about how individuals assess the threat of oil and gas is interesting in light of previous research studies which indicate citizens who live near oil and gas tend to choose individualistic methods of responding to oil and gas rather than collective actions (Eaton and Kinchy 2016). Based on the way residents assessed risks of oil and gas, one potential rationale for this finding emerging from this research is that *residents perceive specific exposure events of oil and gas development locally as personally harmful rather than collectively harmful even if they see oil and gas development as an overall detriment to their communities (H3)*. While some past work has indicated citizens may complain more where local government agreements exist with oil and gas producers and operated on the hypothesis that agreements may create awareness, the hypothesis resulting from this analysis is that agreements also help to give purpose to complaints by providing a forum for them to be leveraged as evidence of impacts (Shaffer, Zilliox, and Smith 2017).

In the places where residents were involved in community organizations that worked on oil and gas issues, these groups were able to mobilize complaining. Residents who were engaged with community organizations or who otherwise hoped to mobilize reported complaints were useful for their organizations in addressing concerns even if the complaint did not lead to their specific interests being met. This means *engagement may change the nature and function of complaints from individual engagement to a collective demonstration of impact (H4)*. At first, this may appear to contradict the finding that individual complaints are filed in regards to individual threats. However, recognizing threats to themselves was not seen as absent those threats being able to impact policy at large. Essentially, citizens complained about threats to

themselves but recognized those threats as potentially beneficial to others in terms of larger oil and gas policymaking.

Thus, the presence of engagement policies may not reduce complaint behavior but could lead to more complaints by giving unaddressed complaint purpose (H5). As result, complaining may not dissipate with collective action, but instead the purpose of citizens filing complaints may change from that of addressing a threat to themselves towards documenting wrongs as part of a cumulative process of having concerns addressed. These residents who were engaged in organizations that participated in engagement processes with companies and governments through policies such as company-adopted engagement strategies expressed efficacy in complaining that was not expressed by residents who complained in areas where such structures did not exist.

What is not included in this analysis of perceptions and resulting actions is who did not complain, or who was not willing to participate in the study. While the refused interviews were people who were strongly opposed to oil and gas development but did not think studies would alleviate issues, it is likely many pro-development individuals similarly decided not to respond to the interview request or they are less likely to submit complaints to the state (Personal Communication (2x), August 2017). While a recent study of Colorado voters found that 55% of Colorado residents supported hydraulic fracturing, opposition to oil and gas drilling here was primarily in response to local development of resources in and around homes, not broad opposition to oil and gas development (Stapleton, Scott Adler, and Sokhey 2016). For environmental justice scholars, the fact that all of the respondents to my survey were white and registered voters should cause questioning of the merits of complaint forums as monitoring.

Since complaint forums require self-selection for citizen engagement, they may increase inequalities in recognition of environmental and social harms (Fung 2015). Developing this hypothesis further may benefit from evaluating areas where impacts were identified by means other than complaints and yet complaints did not occur.

CONCLUSION

Using the PADM to characterize complaint behavior reveals that complaining is a behavioral process by which individuals report observed hazards, but that the nature in which those hazards are addressed can fundamentally affect citizen follow up. Moreover the choice to complain reflects the institutional context and citizens perceptions of whether they can accomplish goals for themselves or their community via complaining. While the focus of this paper is on use of complaints as a protective action against oil and gas development impacts, this should not be taken as a statement that oil and gas development only have negative impacts or that residents only perceive negative impacts and not benefits. Rather, complaints are inherently about impacts and not benefits and therefore they exist as both a potential protective action which can be taken in response to risks as well as a method of engaging the lay public in management. Given this, complaints reflect intrusiveness and proximity of oil and gas— factors which can make short-term events and unclear ties between environmental cues and specific threats unnecessary for complaints to occur.

Environmental cues served as the primary motivator of complaints, not social cues or warnings about potential risks. For most complainants, complaints were filed about observed threats to themselves. Complainants did not report to the State the potential for community threats except in a few isolated cases. However, where engagement mechanisms exist— these

may be facilitated by community groups or operate through local governments— complaints can transition from a method of conveying impacts to government to a method of recording impacts for collective addressing of complaints. Community groups and agreements between firms and governments fostering engagement between the public and companies may help to make complaints a collective rather than individualistic action. This means that where engagement practices exist, complaint volume may actually increase as citizens become more involved in the process. Thus, even though complaints serve as a potential indicator of harm, they also reflect the management context of their filing. Both increasing the level of response to complaints, or creating systems of engagement that make complaints effective, could lead to further increases in complaints. If this is the case, the nature and substance of these complaints in high engagement or high-complaint efficacy areas might change. One way this might evidence itself is via an increase in repeat complaints relative to one-time complaints.

Future research into complaint behavior should include analysis of who does not complain and thus fails to engage with government about impacts of oil and gas. Additionally, the low level of efficacy in complaining may indicate that studies of complaint behaviors in areas where they are perceived as more effective may result in different findings since the perceptions of alternative actions that could be taken may be different. While the PADM was useful for characterizing complaint behavior, using the stages of PADM to characterize a time-linear process being recalled by residents was somewhat of a challenge, as perceptions profoundly shaped how individuals discussed complaining. Nevertheless, the model provided clear variables for coding and analyzing complaint behavior. Further application of the model to other technological risks could be valuable for understanding citizen responses and how they are

shaped by potential interventions. As oil and gas development continues in Colorado and across the US, the experience here will undoubtedly continue to change as perceptions of oil and gas and contexts for complaining change. Yet, continuing to understand how citizens engage with governance process will remain important. Complaints only provide one method of engaging with government and firms, yet, they provide a method for governments to allow citizens the possibility to voice concerns even if action in response to those concerns is deemed less than fully effective.

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4. Thick Complaints: State, Firm And Local Actions In Promoting Principled Engagement Via Citizen Oil And Gas Complaints

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ABSTRACT

Thick participation processes use principled engagement around issues and values to promote better policies and improved policy outcomes. In Colorado, the citizen oil and gas complaint forum is designed as a type of thin participation, characterized by one and two-way communication about resident concerns which allow expressing opinions or sharing information. However, because such forums create a pathway for citizens to express downstream policy concerns to state agents and other stakeholders, they create the potential for thick participation. Using a sample of 17 semi-structured interviews with Colorado residents who filed complaints about oil and gas extraction sites with the state of Colorado, this paper evaluates what facilitates the development of thick participation as measured via principled engagement which occurs through the subprocesses of discovery, definition, deliberation, and determinations. These engagement processes can take place between firms, residents and local/state governments. Four key findings emerge. I) Agreements that give citizens or governments legal standing in planning and procedures are most effective at promoting thick, principled engagement because they provide a coercive incentive for engaging with citizens. II) Complaints rarely initiate contact between firms and citizens. Such contact in most cases already exists. Instead, complaints can bring government (either state or local) into the relationship as a mediating and moderating actor. III) Discovery and shared definitions are unlikely to emerge when engagement is coerced or mandated via institutions and when firms lack a strong internal motivation to engage. IV) Scientific evaluations of complaints rarely promote thickening of participatory processes. Rather they support the function of complaint forums as a voting process for yes/no investigations—maintaining thinness.

INTRODUCTION

Thin participation is an increasingly common form of public participation, especially with internet and social media technologies that allow rapid one-way communications with government officials or to citizens (Roberts 2004; Tina Nabatchi 2012). Thin participation refers to “a variety of tactics that allow individuals to affiliate with a cause, submit ideas, indicate preferences, or otherwise receive or provide information in fast and convenient ways” (T. Nabatchi and Ertinger 2015). Citizen complaint forums are one example of a thinly constructed engagement practice.

For example, poaching hotlines form an important element of conservation policing policies both within the US and internationally (Nelson and Verbyla 1984). Some governments maintain hotlines for reporting cyber security threats (Chang, Zhong, and Grabosky 2016). 311 call hotlines are used to report potholes, damaged roadways, and other city issues within many municipalities (O’Brien 2015). Governments have leveraged citizen twitter posts to adapt disaster responses to needed areas (Mills et al. 2009). In the environmental field, studies of complaints as a monitoring apparatus have included economic modeling and conceptual review, yet in-depth analysis of actual complaints remains rare (Brewer 2007; Goeschl and Jürgens 2012). Studies that utilize complaints as an indicator of environmental performance for assessing risk and/or monitoring firms commonly cite the noisiness in attributing complaint to harm as a critical factor limiting their applicability in risk assessment and regulatory policies (Warwick and Ortolano 2007; Weersink and Raymond 2007).

Multiple states including Texas, Wyoming, and Colorado all maintain complaint systems as methods of monitoring oil and gas infrastructure and development. These complaint systems focus mostly on enforcement and monitoring, but also create the potential for learning about shortcomings and resource needs. In Colorado, the case for this study, the Colorado Oil and Gas Conservation Commission which oversees oil and gas infrastructure and development in Colorado allows submissions of complaints by residents. Uniquely among states with complaint systems, Colorado publishes the correspondence that goes with each complaint, allowing study of the actual complaint process (COGCC 2017). The complaint forum in Colorado has previously been used to evaluate the performance of the Colorado State Oil and Gas Conservation Commission (COGCC), with agency performance deemed low in terms of complaints producing enforcement action (Opsal and Shelley 2014). However, complaints are not valuable solely as a method of ensuring environmental compliance but are a potential avenue for engaging citizens in the process of governing, making firms and governments aware of citizen concerns.¹

In Colorado, when COGCC believes a complaint falls under its jurisdiction or requires an onsite investigation, they necessarily (partially due to private property rights) contact the operating firm to detail their plan to investigate, the need for corrective action, or to alert the company that the complaint has. They then provide a notice back to the citizen in regard to their finding. Most of the complaints I reviewed do not go beyond this one-way or two-way information exchange between the agency and the citizens and firms. One and two-way forums have a value in that sometimes governments simply need receive feedback on actions or can

¹ Governing is defined as, “laws, administrative rules, judicial rulings, and practices that constrain, prescribe, and enable . . . the production and delivery of publicly supported goods and services” (Lynn, Heinrich, and Lynn 2000, 235; Emerson and Nabatchi 2015a).

benefit from an indicator of citizen satisfaction with governance outcomes (Tina Nabatchi and Amsler 2014; Fung 2006a). However, they do not usually create the kinds of discussions that can lead to sharing of values and interests between multiple parties— these are elements reserved for thick participation.

“Thick” participation processes are those which utilize principled engagement or reasoned conversations about issues, values, and concerns related to policymaking (Emerson and Nabatchi 2015b). By creating discussions between stakeholders with diverse interests and values, thick participatory processes can promote discovery, definitions, deliberation and determinations about impacts, values, and concerns (Emerson and Nabatchi 2015b; Tina Nabatchi and Amsler 2014). Most of the time, complaints remain a two-way path of information exchange between residents and the agency or firms and the agency. What starts as thin participation, however, may not remain thin. Occasionally, complaint documentation demonstrates that firms, governments, and citizens all engage with each other over how to address issues and concerns at wellsites. When this happens, what was instituted as a thin participatory program is transformed into a process demonstrating the properties of thick participation, characterized by discussing, learning, and deciding (Emerson and Nabatchi 2015b). Critically the presence of these processes is expected to promote normative, substantive and instrumental improvements to policies (Kraft and Clary 1991; Kraft 1988; Coenen 2009; T. Nabatchi and Ertinger 2015). What can enable transformation of complaint response from a thin to thick participatory process?

This paper applies in-depth case analysis of complaints made by local citizens about nearby oil and gas activities in the State of Colorado. Specifically, it evaluates what rules, practices, governance procedures, and contexts for management encourage the transformation of

complaints from thin to thick participation, characterized by the development of principled engagement between residents and operating firms as well as state and local governments. By using a purposive sample of cases where citizens have filed complaints about oil and gas and asking citizens about the role of the complaint process in the larger process of facilitating direct citizen engagement with firms and government, this paper suggests governance factors that firms and regulators could each use to increase the knowledge gained from the complaint process and increase the perceived efficacy of citizens who file complaints.

CASE DESCRIPTION AND REVIEW OF LITERATURE

Public participation practices are defined by three questions. 1) Who can participate? 2) How does participation occurs? And, 3) What is the role participants can play in the decision making process (Fung 2006b)? For complaints in the state of Colorado, the answers to these questions are officially defined by the legal statutes that standardize oil and gas development. They are also shaped by the function and operationalization of complaints as a tool promoting citizen engagement in governance. While technically anyone can file a complaint about oil and gas in Colorado according to Rule 336 which states, “Any party who wishes to file a complaint regarding oil and gas operations is encouraged to submit a Form 18” (COGCC Rule 336), the rules requiring agency follow-through to address complainant issues are more defined. Complainants are defined as: mineral owners, surface owners or tenants, other state agencies, the local government (with jurisdiction), or “any person who may be directly and adversely affected or aggrieved as a result of the alleged violation and whose interest is entitled to legal protection under the Act” (COGCC 500 series rules).

Given the above-defined appropriate standing of complainants, the “Director will investigate all complaints” and “notify the Complainant of the determination.” Next, “if the Director determines no violation occurred, the Director will notify the operator, and no further action will be taken” or if a violation is identified, “ the Director may resolve the matter without seeking penalties” or “initiate an enforcement action seeking penalties”. Importantly then, “a Complainant who has filed a written complaint on a Form 18, Complaint Report, will be given 14 days to comment on the terms of a draft proposed settlement” (COGCC 500 series rules).

This formal structure for complaints belies two underlying processes that affect how complaints are actually addressed within the State. First of all, previous work has revealed that complaints are considered an inevitability of oil and gas development, firms are viewed by residents as unconcerned, and accidents are viewed as mistakes not criminal activities (Germain, Floyd, and Stehman 2001; Opsal and Shelley 2014). Secondly, the formal citizen-agency-firm-agency-citizen communication pathway defined in law is not reflective of a back-and-forth relationship that can develop as a result of the process. Formally, the 500 series rules define regulation and enforcement, yet, as the state agency works with firms and residents alike to resolve conflicts, the process can be decoupled from its officially designated procedures (Meyer and Rowan 1977). In observing complaint cases in Colorado, I found that while thin, one-way participation may be the norm, complaints also sometimes lead to multi-stakeholder engagement about how address resident concerns (Scott 2017b, [a] 2017, [c] 2017). Where these processes occur, this raises the possibility of collaborative learning via complaints (Daniels and Walker 2001).

Emerson and Nabatchi (2015) operationalize collaborative learning through principled engagement in which,

“people with differing content, relational, and identity goals work across their respective institutional, sectoral, or jurisdictional boundaries to solve problems, resolve conflicts, or create value” (Emerson and Nabatchi 2015).

During the discovery phase of principled engagement, individuals share or identify relevant information on values or interests, during definition, individuals define shared meanings, via deliberation, individuals discuss issues and values while determinations are decisions resulting from such actions (For full definitions see Table 1). This learning process creates a potential for instrumental and normative outputs to result from participatory processes (Coenen 2009).² Because of the learning that can occur via these interactions, engagement at large is commonly suggested as a tool for addressing social concerns related to oil and gas development (North et al. 2014; Small, Güvenç, and DeKay 2014). However, where engagement becomes “thick” rather than remaining “thin”, the benefits of collective learning could enhance the effectiveness of such practices at promoting improved social acceptability and addressing of citizen concerns.

² Previous work on citizen engagement has found that citizens participation is usually motivated by an interest in changing specific outcomes not by values such as improving governance or protecting the environment (Tina Nabatchi 2012). As a result, citizens are likely to judge the efficacy of complaining based on achieving desired outcomes. Changes to desired outcomes, which could take the form of determinations are only one potential product of principled engagement. If decisions are the only goal of engagement any time citizens do not achieve their interests from complaining, they may cease to complain thereby ending the complaint process.

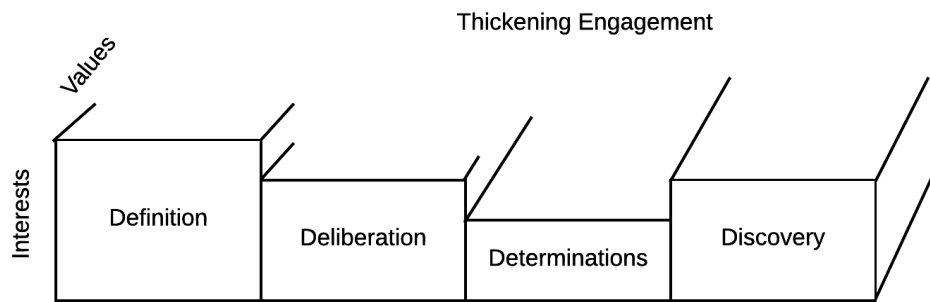


Figure 1: The conceptual model for thick versus thin engagement. As each of definition, deliberation, determinations, and discovery increase, engagement thickens. Thickest engagement occurs when the processes involve both values and interests.

Unlike thin engagement, thick engagement is defined by the presence of increasing levels of each of the four sub-processes of principled engagement, being deliberation, definition, determinations and discovery. The presence of each of these processes is indicative of more principled or “thick” engagement. First, deliberation refers to conversations and discussions about values or issues. Values are the “complex stable emotio-cognitive assessments that guide individual behavior” (Bozeman 2007; Tina Nabatchi 2012). Values can motivate interests which are the specific goals of residents. For example, a resident might be interested in reducing the noise at a site because the noise disrupts their valuing of their neighborhood as a residential community. While either can be discussed during deliberations, engagement is thickest when both values and interests are addressed. This is illustrated in Figure 1. Definitions also are evidence of thicker engagement, as thicker engagement practices will have more co-creation of shared understandings and actor rules. As actors engage, they also discover each other’s values and interests as they share knowledge via discussions. Finally, determinations or joint decisions will result from the thickest engagement demonstrating a commitment to actions as a result of discussion. In the thickest cases of engagement, determinations will reflect values and not just

interests, thus broadening potential discoveries, determinations, and definitions beyond the initial scope of the conversation.³

The goal of this paper is to suggest when and under what circumstances complaints exhibit characteristics of thick participation. Specifically, this paper evaluates how complaint content, institutional context, and motivations for firms, residents, and governments to act collectively can promote the complaint process functioning as a thick participatory process rather than as a thin one-way or two-way process.

METHODOLOGY

Complaints made to COGCC are a matter of public record; however, in order to examine the engagement process in-depth, this study follows-up in greater detail with complainants. This allows assessment of what is recorded in the complaint system in light of the larger context a complaint exists within, and examining if the process of filing a complaint resulted in engagement that transcended what gets recorded in the official correspondence.

For this study oil and gas locations and complainants were selected on previously identified firm engagement actions, voluntary actions overall, and characteristics of oil and gas locations following the pathway analysis methods suggested by Weller and Barnes (Weller and Barnes 2014; Scott 2017b). Specifically, respondents were selected in pairs to 1) maximize Mahalanobis distance in the count of firm-adopted engagement practices with covariates differences minimized, and 2) minimize mahalanobis distance in the count of practices while allowing covariates to vary. The initial goal was to complete 18 interviews or 9 matched pairs in

³ I do not comment on positions here because for many oil and gas related problems firms have technical expertise about possible solutions which means discussions are rarely position based. An exception may be asking for larger setbacks, but, this is something that cannot generally be accomplished by filing a complaints. Complaints, as demonstrated in (Scott 2017a) reflect a perceived threat not a desired solution.

an effort to balance coverage and with cost while forming a dataset with a variation in well-specific covariates and and firm-specific practices. Accordingly, the sample is not a random but is purposively structured to identify potential relationships between engagement practice selection by firms, rules and practices at individual wellsites, and complaint-related processes and outcomes.

To form this purposive sample, I mailed letters to 65 individuals. First, 18 individuals were sent letters via the US mail. The letters were sent to addresses associated with complaints. The letters included a web address, phone number, and email address, one of which they were requested to respond via for scheduling an interview. When respondents did not respond within 10 days a follow up letter was sent to the same address. If a response was not received, the address was first reverified and if a valid address was not identifiable on the COGCC website or from another public data source maintained by the State of Colorado the recruit was replaced with a new matching case. Thus, a total of 65 complainants were targeted with first and or secondary follow-up letters. Of these, 29% of first or second letters resulted in a scheduling of an interview and 22% of first letters were returned as undeliverable. Because two planned interviews were later cancelled, 17 interviews were conducted.⁴ This represents 33% of delivered interview requests. In three cases individuals formally refused in-person interview requests due to dissatisfaction with previous research projects. However, one of these individuals allowed me to ask questions over the phone which, though unrecorded, they gave me permission to include in the analysis.⁵ The interviews were conducted based on a semi-structured protocol (See

⁴ Because this is a purposive sample this should not affect the inference made here.

⁵ For this individual I took notes on the conversation and also recorded a audio-file summary of my observations of the discussion, which i then coded as the interview. This individual was very opposed to oil and gas development in general and distrusted the state, companies, etc. She was not involved in discussions with companies.

Appendix). The interviews were conducted during two one-week periods in August and October of 2016. When possible, complainants were met at their homes though in two cases interviews took place at public coffee shops or banks.

Interviews were recorded and transcribed using a first stage machine transcription via the Voicebase Online Web Application which was then vetted and corrected by the primary researcher manually (usually extensively!). For Scott 2017c, transcripts and other textual resources including permit documents, complaint correspondence, summary memos of place-specific characteristics were coded for variables identified by the Protective Action Decision Model (PADM) as critical to the development of citizen perceptions and behavior in regards to a perceived threat (Lindell and Perry 2012; Scott 2017a). This included coding social and network connections with stakeholders, which form the basis for the analysis in this paper. These network connections were identified when individuals reported discussions or communications with another stakeholder group including state government, firms, local government, lawyers, watchdogs, community groups and neighbors.

Network connections alone are not indicative of participatory processes or engagement, but because I coded any discussions between citizens, governments, and firms as a network connection for the PADM these excerpts provided a more parsimonious dataset for identifying where principled engagement occurred.

For each excerpt that the primary researcher had previously coded as a network connection between stakeholders, I analyzed the excerpt for the elements of principled engagement described in Table 1. Because complaints are only one potential mechanism for engagement, I began the project by first studying any reported network connections for citizen

description of their engagement with that actor as “principled”. I later limited the analysis to focus on principled engagement through complaints alone. To match an excerpt with principled engagement the exchange had to indicate engagement that went beyond one-way or two-way interactions between the resident and the state agency. Thus, any engagement process between firms, residents and governments took the form of a notification or a comment without a response would be coded in the dataset as a network connection without principled engagement.

Table 1: Codes for Describing Principled Engagement

Concept	Definition	Example
Principled Engagement	Dialogue or communications between residents and firms or residents and firms and the State of Colorado or residents and firms and local government officials. Requires back and forth information exchange and not one or two way notification/communication.	“Yeah but it went through for it when I mean it was informal but it went through a fairly formal process as much as there were lots of meetings about it this that and the other and we probably had meetings and meetings and meetings”
Discovery	"Revealing of individual and shared interests, concerns, and values, as well as to the identification and analysis of relevant and significant information and its implications (Emerson and Nabatchi 2015)	“So when I meet with _____ people this week I already informed him that we have an issue down there and they wanted to know what it was and I said just wait...”
Definition	Efforts to build shared meaning around issues, including roles, problems, terminology used to describe actions and outcomes.	“You just lost you know your house essentially and you have no recourse you have no way to communicate with anybody about it talk to anybody so that was that was actually a really nice thing for me he was like you got a problem to call i can tweak things and i would be glad to do so.”
Deliberation	Use of candid, reasoned discussion around issues (Emerson and Nabatchi 2011), with the potential for determinations.	“I showed _____ that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean. And there was excuses like that through the whole process. Well what is this vibration _____ well I don't know.”
Determinations	Decisions made either in regard to risk mitigation actions, community actions, procedure, or addressing citizen concerns.	“The county told them if we grant these permits you have to do these things so it was a condition of the permit. It wasn't so much of us working with the commissioners. It was just that the commissioners felt like this would pacify us enough.”

With network connections tagged as exhibiting principled engagement at the second-stage described above, I performed a third stage analysis where I tagged excerpts for whether discovery, definition, deliberation or determinations were reported by interviewees (Table 1). As more of these processes are present, I classify the increase as deepening in engagement (Figure 1). For example, a process with both discovery and definition would be coded as two examples of principled engagement whereas just discovery would be coded as only one example of principled engagement. A full copy of the codebook used for these procedures is available in the appendix.

In addition to the four subprocesses of principled engagement, I recorded instances where individuals discussed institutional arrangements such as location specific rules and property rights. An example of an institutional arrangement is a requirement for county approval or an informal institution such as regularly established meetings about oil and gas. Because the complaints were sampled based on adoption of engagement-related voluntary practices and not the presence of more general kinds of institutional arrangements such as local land use policies, institutional structures were not included in the complaint database. I thus had to individually identify relevant arrangements through reviewing county, state and local documents.

Institutional arrangements in the coding are taken to be context for the network connections, by which I mean they are the formal and informal rules and structures that shape the complaint process and interactions with oil and gas. I coded procedural arrangements as well. Procedural arrangements are the “formal and informal rules and protocols, institutional design, and other structural dimensions” (Emerson and Nabatchi 2015a, 69). They define the intra-network structure of engagement and also the role that engagement can lay within the larger

system of governance. Institutionally created dependencies between actors were coded as interdependence. For example, a company is required to work with all actors with mineral ownership or surface rights when drilling for oil. These interdependencies also can structure the consequences facing firms. Therefore, I additionally coded where residents reported on consequences of firm actions. Incentives are,

“internal issues, resource needs, interests, or opportunities, or to external situational or institutional crises, threats, or opportunities that must be addressed to mitigate salient risk or advance desired conditions for key stakeholders and the broader public” (Emerson and Nabatchi 2015b, 46).

Because consequential incentives potentially create a motivation to engage, but are also shaped by institutions, I coded consequential incentives where institutional arrangements or other contextual features made firm actions necessary to accomplish desired conditions.

During coding, additional secondary codes were developed to help clarify relationships underlying specific variables from the framework. For example, I divided institutions into categories such as “firm voluntarily adopted practices” and “formal meeting arrangements”, and “perceptions of oil and gas development” into different sentiment categories. This coding and data analysis was conducted in the computer-assisted qualitative data program Dedoose.

The coding was all conducted by a single researcher. While this makes intercoder consistency checks less critical for ensuring within sample consistency (Saldana 2015), replicability of the coding is still critical to ensure other scholars can replicate the findings. Moreover by testing for consistency compared to a neutral coder the subjectivities of the primary coder can be more fully understood (Campbell et al. 2013).

I performed intracoder reliability tests on a sample of 25 excerpts describing network connections. This sample represented just over 8% of the entire sample of possible network

connections (see appendix for description); however, it was not a random sample but was selected purposively and blindly in Dedoose to test the consistency of coding by providing a variety of excerpts demonstrating potential subprocesses. The intracoder test resulted in a pooled Cohen's kappa of 0.5 indicating moderate consistency in a recoding of 25 network excerpts from across three interviews (Landis and Koch 1977). Average intrarater agreement for principled engagement and the five subprocesses was 83%, though cutting out the higher-level principled engagement code, the agreement on the four subprocesses was 87%.

Additionally, a training document was developed for training a second coder to expand the dataset in the future (see appendix). I spent one hour training a second coder to code a complete interview transcript for network connections. They then identified principled engagement within these connections, and further identify instances of each of the four sub-processes of principled engagement. We then compared our codes and discussed difficulties or ambiguous areas. A primary area of disagreement between me and the second coder was what constituted deliberation. While my coding required a potential to change practice based on discussions, this was still up to the judgement of the coder as to whether the oil and gas company or the state or the resident might truly change practices based on discussions. A citizen perception of ineffectiveness in deliberations often sways the description towards emphasizing nothing happened as a result of the discussions. However, this is not the same as their not being a potential for change— this became a critical area of discussion between me and the secondary coder, who placed more weight on the citizens perception of the other actors in the deliberation. Neither of these interpretations are necessarily wrong, but it reflects the fact that a process may be interpreted by one member as deliberative and other members as ceremonial outreach.

Because the dataset includes only 17 purposively sampled cases, the results from this study should not be seen as generating out-of-sample estimates. Instead, the goal of the study is to generate hypotheses about what makes thick participation more likely. In presenting the results, I build out two different cases (made up of three interviews) that illustrate how complaints can exhibit features of thick engagement. I provide a contrasting case connecting three interviews that demonstrates properties that resulted in complaints exhibiting thin engagement practices. By comparing and contrasting across these cases and the other 11 interviews for which I do not present the full contextual histories of within this paper, I provide hypotheses about what governance elements can allow engagement to occur via complaints.

RESULTS

Summary Of Demographics And Cross-case Findings

In Figure 2, I present excerpt tag counts for each principled engagement subprocess, as well as excerpt counts for network connections and institutional arrangements. A full table of all excerpt counts for each case is available in the appendix. While all individuals reported connections to firms in some manner (via notification, informal discussions), not all individuals engaged with firms directly about management at sites. Connections to local organizations were also relatively rare with only 18 excerpts from the entire sample taken from only 5 cases. All individuals discussed contact with the state government— as these are all complainants everyone, by definition, has engaged in this one-way connection.

jurisdiction, differences in excerpt counts can be attributed to how often an individual discussed the institutional context and the municipal jurisdiction of the well compared to the complainant's home address.

In terms of demographics, nine respondents lived in Weld County, seven in Garfield County, and one in Huerfano County. Complaint filings require not just oil wells, pipes, compressor stations and other development features, but also people to complain about them. Weld is the predominant oil producing county and also has a large population base. Garfield County, though largely rural, has large amounts of gas development near the county population center. Thus even though this was a purposive sample of complaints, the geographic footprint here is likely little different than a random sample.

Interviewees had diverse relationships with oil and gas sites, and included mineral owners and surface owners all responding. Notably only one respondent (ID=14), expressed positive sentiments about oil and gas development overall and this respondent expressed that most complainants were those who did not have mineral rights; however, the two other mineral rights holders in the sample expressed they would gladly give up rights to have the issues they faced addressed. Many individuals requested to have spouses sit in with them at the interview, and thus, while more females than males responded to the interview request, a number of males also sat in on interviews; however, the primary interviewee is recorded as the person who filed the complaint (Table 2). Finally, though approximately half of the sample were retired from their occupations, multiple people including interviewees one, three, five, eight, eleven, and fourteen discussed how their work (or former work) influenced engagement.

Table 2: Demographic Descriptions of Respondents

ID	County	Relation to Site	Gender	Occupation	Town	Retired
1	Weld	Nearby Resident	pair (female led)	Clerk	Mead	TRUE
2	Weld	Mineral	female	Farmer	Uninc.	TRUE
3	Weld	Nearby Resident	male	Lawyer	Firestone	FALSE
4	Weld	Mineral	pair (female led)	Teacher	Windsor	FALSE
5	Weld	Nearby Resident	female	Veterinarian	Erie	FALSE
6	Weld	Nearby Resident	pair (female led)	Author	Windsor	FALSE
7	Garfield	Surface	male	NA	Uninc.	FALSE
8	Weld	Nearby Resident	female	Community Organizer	Mead	FALSE
9	Garfield	Surface	pair (male led)	NA	Uninc.	TRUE
10	Weld	Nearby Resident	male	NA	Mead	TRUE
11	Weld	Nearby Resident	male	Engineer	Mead	FALSE
12	Huerfano	Surface	female	Business	Uninc.	TRUE
13	Garfield	Nearby Resident	pair (female led)	NA	Battlement Mesa	TRUE
14	Garfield	Mineral	male	Farmer, Oil, Logging	Silt	TRUE
15	Weld	Nearby Resident	female	Business	Windsor	FALSE

16	Garfield	Nearby Resident	female	Teacher	Battlement Mesa	TRUE
17	Garfield	Nearby Resident	female	Farm	Silt	FALSE

When Engagement Stays Thin: Evidence Of Thin Engagement Via Complaints

13 of the 17 interviewees reported at least one instance of engagement with firms about management of oil and gas sites. For the four who did not discuss interactions with firms (cases 3, 10, 14 and 15; see Figure 2), the complaint process remained thin engagement— characterized by the complaint creating one-way or two-way information exchange but not principled engagement between firms, residents, and the State. For an additional two individuals, the filing of a complaint itself did little to promote enhanced levels of communication between the citizen and firms and the State oil and gas agency though these individuals were already in discussions with firms. In three of the four cases where individuals did not talk to firms directly, the complaints were filed about noise, while a third individual filed his or her complaint about chemical odors. Of the two complainants for whom complaining made little difference in terms of engagement with companies, for one the complaint was a fairly basic request to move a pile of dirt, while the other did not even recall having filed a complaint.

The topical content of these thin complaints were primarily noise and odors (these were coded for Chapter 3A). When a noise or odor complaint occurs, the State follows up by investigating the complaint via a noise study or an air quality study, respectively. In no case within my sample did air quality studies find violations either. In the case of noise complaints, the State addresses the report by consulting with the firm on methods of addressing the issue and

also conducting a noise study. For example, after one such complaint, the state agent reported that,

“(the operator) advised me he was aware of the noise complaint and he was continually monitoring the noise levels... he had extra noise panels installed at the location in an attempt to control any noise from the location... he was having the mufflers on the frac equipment replaced...” (Complaint Document, 1661).

In another of these cases, the summary of the complaint and its investigation is as follows,

“A sound survey was done 25' from the complainant property... No increase in background C Scale noise was observed when fracking started... (the company) was made aware that there was a noise complaint.” (Complaint Document, 797).

In a final one of these noise complaints,

“After speaking to the complainants, I proceeded to perform site inspections... Upon entering the site I observed... hay bales set up as sound mitigation. The area toward the northeast, which is toward the complainants' houses, did not have any sound mitigation set up. I performed a sound study approx 350' to the northeast... Results of the sound study indicated the frac operation was operating within the operational limits of the COGCC sound rules.” (Complaint Document 2163).

Regulation of low-frequency noise is complaint-based in Colorado meaning that the State only investigates where complaints occur. Readings are taken 25' from the complainant's residence; however, the official law only requires a sound study and reasonable mitigations so long as the overall noise level is below required limits. In each of these cases previously described, companies and the State agency fulfilled their legal requirements by performing a study, adopting mitigation alternatives, or continuing to assess how mitigations could be improved. Yet outcomes reported by residents only included learning what regulations were. Most residents who received official reports described them as useless and accomplishing little to address the issues they presented. Noise regulations, here, did not reflect the level of noise local residents found intrusive.

Even in cases where engagement between residents and firms did occur, air quality tests require on-site investigation when an odor is present, and many respondents reported it often took until the next day or later for an air quality test to be made. While two residents commented that continuous air quality monitoring might help, in the one case where continuous monitoring was used, there was little method for conveying the results to the resident. Sound and air studies, alike, were described as lacking the ability to convey meaningful information other than that no violation occurred. As a case in point, one of the complainants whose situation is described above told me,

“I mean the only thing that came out of that is I became aware of what the real numbers were and that it was a commercial site but nothing else came out of it. I'm probably sounding very negative here but that's my experience” (Interview 10, 20994).

One byproduct of this outcome of the complaint process is that it can prevent individuals from contacting the state agency further. One resident told me,

“I got to a point where it was bad enough that I really needed to put in some more complaints but I didn't because from my previous experience. What really was the issue, was that they weren't going to get solved.” (Interview 11, 5812).

In both of the interviews from which the above quotes were taken, these sentiments were expressed despite the fact that contacting the State led to these specific companies adopting additional measures that attempted to control sound, for example by fixing sound barriers or by attempting additional mitigations. The actions taken by both the firms and the companies fully followed the legal provisions of the complaint process and yet the residents exited the complaint process dissatisfied with the process of complaining to the state AND with the perspective that complaining is a low-efficiency practice. Here it is important to note that overall, and especially

in cases of noise and odor complaints, most individuals expressed low efficacy with complaining. Seven complainants described lack of communication back to residents as part of what made complaining not work. Eight complainants described a lack of understanding on the part of regulators and firms about how development was affecting their lives. Six individuals described the time lag as a barrier to investigation. Nine of the respondents reported that complaining led to their interests being addressed; however, this was not necessarily seen as an adequate outcome of the process.

Moving Towards Thick Participation:

Discovery

In 11 of the 17 interview cases I identified elements related to actors discovering new knowledge or relevant information. Discovery occurred via firms' principally engaging with residents, firms engaging with other firms, and firms engaging with the State. For example, when trying to mitigate an odor complaint the investigating State agent reported, "I ALSO CALLED (OTHER FIRM) ON 10.26 REGARDING WHAT HE/THEY DO TO MITIGATE PIT ODOR" (Complaint Description, ID Omitted, Capitalized in Original) which led to identification of an industrial bleach that helped to mitigate impacts at the complainant's address. One interviewee commented about the companies and discoveries through the process that,

"As a resident that had one (oil and gas well), I think they (the company) learned more than we did. I think for them it was an eye opener. Because I don't really think that you know when they decide to put wells in certain places and stuff that you know they're really thinking about what it's going to do to the populace around them" (Interview 6).

The state oil and gas agency making discoveries through complaints also occurred in a number of cases, for example, in one case, the complainant related about the director of COGCC,

“He even admitted that the State was slow to respond but he also said that any time new drilling starts they get a lot of complaints and so they usually kind of wait and see how things settle down before they really do much about them. But then the problem with the Pratt site was that so many complaints kept coming in and that then they finally realized oh it's really a problem” (Interview 5).

Definition

Within the data, definition of issues was the rarest of all of the subprocesses of principled engagement. While definition can refer to roles, responsibilities or issues, one of the challenges in coding definition is that it commonly overlapped with discovery. While I coded both for consistency with the framework for principled engagement, I note this as a weakness in applying the concepts to my case. For example, with an odor complaint, definition can refer to the resident and the firm coming to a common understanding of what the issue is; i.e., jointly recognizing an odor as a real issue. However, this usually coincided with attempts at discovering how to solve problems or discoveries of what was causing the problems. For example,

“I probably called them like two times a week. They were always really nice to start with, but when they started getting aggravated they'd say, ‘We can't find anything. We've done this, we've replaced this... We can't find anything.’”
(Interview 9).

While the complainant and the company were able to define the problem, the process of discovering a solution proved problematic. The company eventually disputed the complainant's definition of the odor as a legitimate problem and quit recognizing it as such.

Deliberation

Deliberations were as common as discovery— occurring in 11 of the 17 cases. Sometimes deliberations were obvious descriptions of multiple actor involvement, for example,

“There were probably like seven or eight people like three people from the State came and four from their direct company and so and then ... all the neighbors that wanted to

come and they came over and we had a pow-wow. Cause I believe that it doesn't do any good to put your arms up and cause a big fight rather (than) try to understand what's going on." (Interview 4).

However, coding where other forms of contact were used in deliberation was more challenging as described in the reliability discussion. Where deliberation occurred, definition and discovery often occurred—the excerpt above is also tagged for definition given the indication of an effort to build shared meaning. The above excerpt was not tagged for discovery because there was no evidence of new relevant information or no further understanding of values.

Determinations

Determinations were as common as discovery across cases— occurring in 11 cases, but it occurred more frequently than discovery within each case. However, despite the fact that public ability to influence a decision is a common referendum on whether involvement in a process is meant to appease versus actually influence decisions, there is no obvious trend between the presence of determinations and expression of negative sentiments about firms or barriers to complaint efficacy. If anything, presence of determinations in cases resulting from engagements resulted in higher likelihoods of individuals citing barriers to effectiveness and especially, greater rates of negative sentiments about firms (Figure 3). Determinations, as an outcome, may benefit residents but ultimately residents did not see decisions as motivated by corporate goodwill but rather by a desire to appease or meet requirements. While one individual expressed that the company they engaged with honestly desired to improve (Interview 4 with the previous quote), there were no new determinations that the respondent described the firm enacting following the engagement process. What mattered to this respondent was the fact that they made an effort to

deliberate and understand values and interests, not that they necessarily made changes as a result of the engagement.

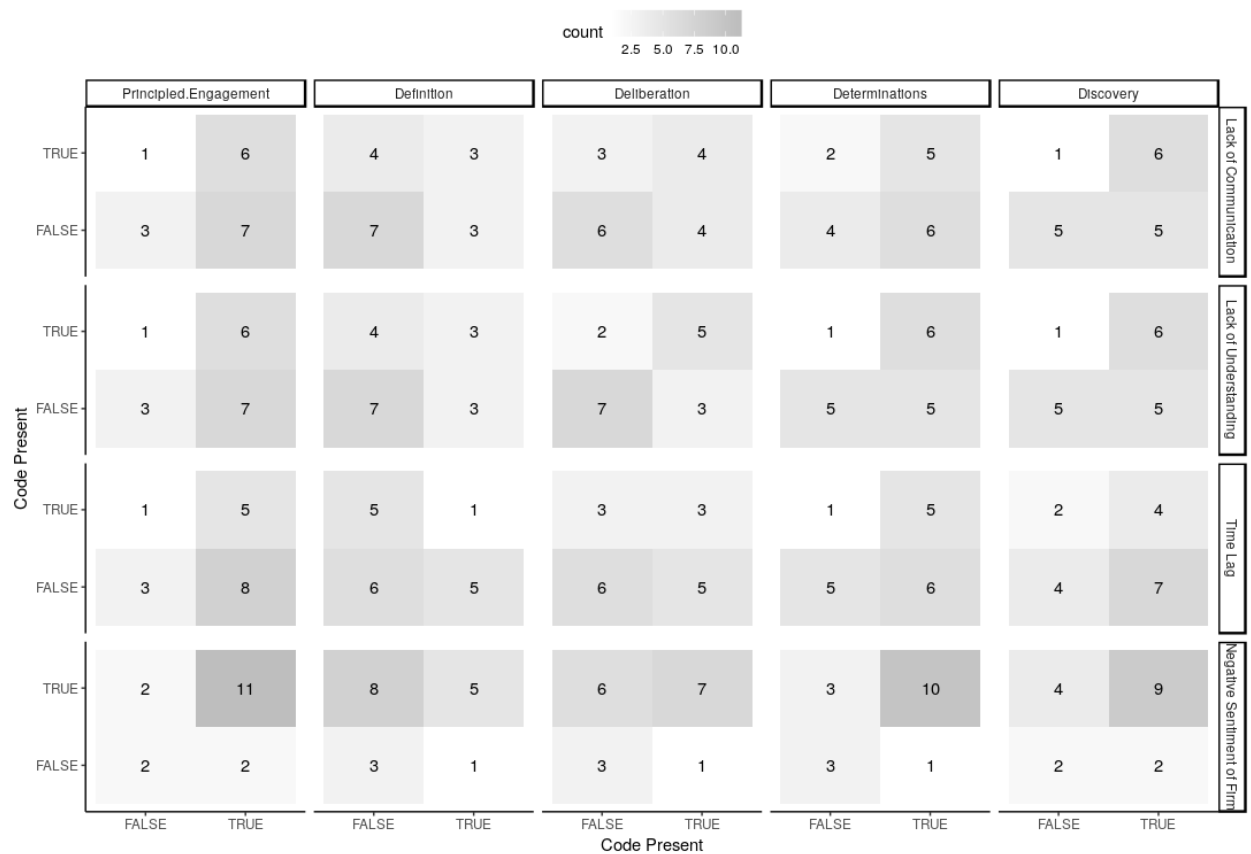


Figure 3: Counts of excerpt codes for principled engagement and rationales for why complaining was not necessarily effective and as counts of expressions of negative sentiments about firms. More observations of principled engagement did not correspond with lower rates of citing specific rationales for ineffective engagement via complaining.

Regardless of the practices officially adopted by firms or the existence of procedural arrangements to encourage firms to work with citizens, perceptions of firms and their attitudes and practices were generally negative with only four individuals not expressing negative sentiments about firms (Figure 3). With the exception of Interview Four’s description of the meeting with the company, there was a strong consensus across the 17 interviews that oil and gas

companies will do what they have to and nothing more. Initial perceptions of oil and gas companies were nearly uniformly negative. Only individual oil and gas workers or companies who entered into situations where a public dialogue already existed through purchasing another company's wells were seen in a positive light. As a result, firm engagement with citizens did not improve citizen perceptions of firms or citizen efficacy in having complaints addressed.

Institutional Arrangements And Incentivizing Engagement

While the complaint procedures are well defined by the COGCC rules, the larger institutional context is critical in structuring consequential incentives for engagement. In viewing all 13 cases where engagement occurs, institutional arrangements play a critical role in structuring incentives for firm engagement with residents; are positively associated with thick engagement. This is not to say institutional arrangements necessarily lead to thick engagement—complaints about noise, as described above, are still predominantly thin. However, where there are institutional arrangements present, there were generally more of each of determinations, definition, discovery and deliberations.

As coding of institutional arrangements within a case increased, principled engagement was also more commonly reported even controlling for the total count of excerpts (Figure 4). Since institutional arrangements were identified separately from principled engagements or even

procedural arrangements that might foster engagement, this was not expected.

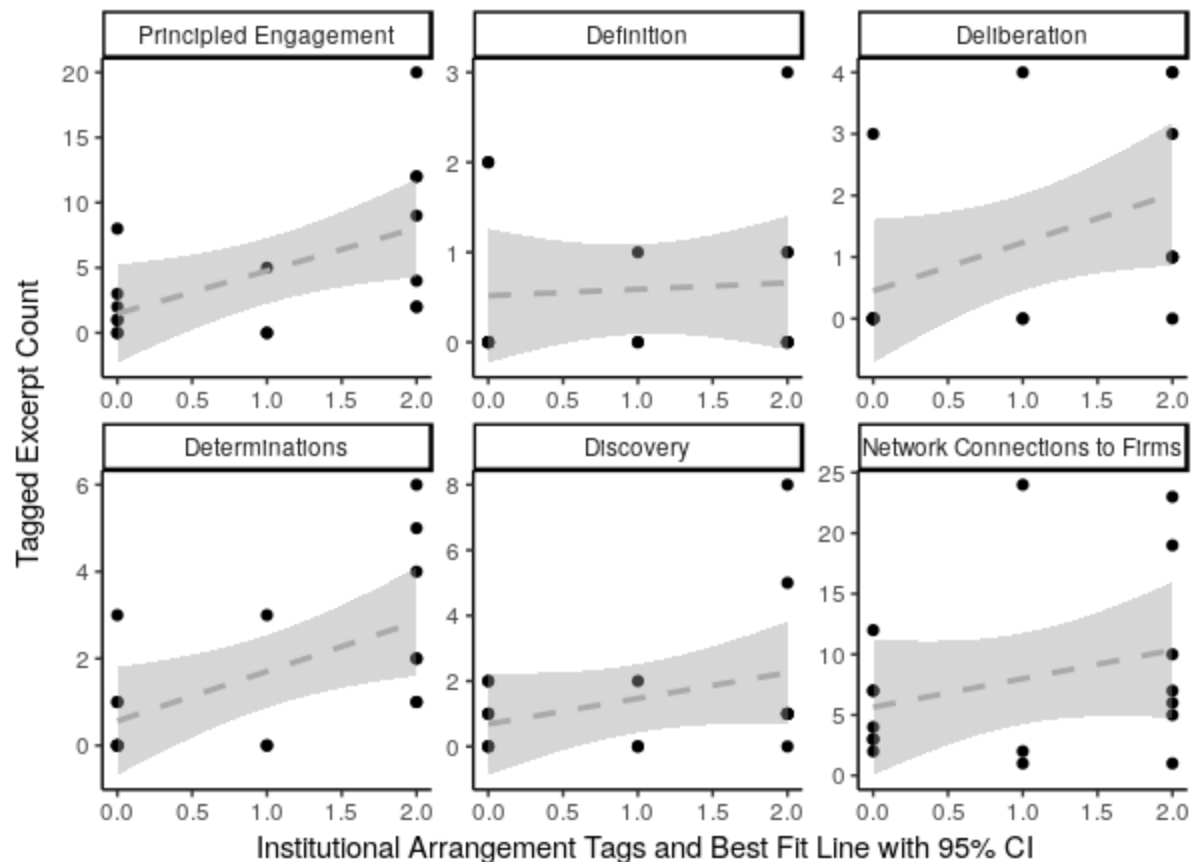


Figure 4: Institutional arrangement excerpt counts by counts of principled engagement processes. Each line represents a linear regression with 95% confidence intervals for the best fit line. Therefore, a flat line fitting within the confidence interval would represent no significant change in engagement processes as more institutional arrangements occur. However, given that this was not a random sample, the results should not be taken as population evidence but instead within sample evidence that as more institutional arrangements existed at sites, more of all principled engagement subprocesses were observed except for definitions.

Examples of institutional arrangements include land use agreements or surface rights contracts. While these in turn also result in effects to procedures established within engagement— when meetings should occur, how often they should occur, and who could talk if meetings did happen— they also drove the incentives firms face in creating motivations for firms to act.

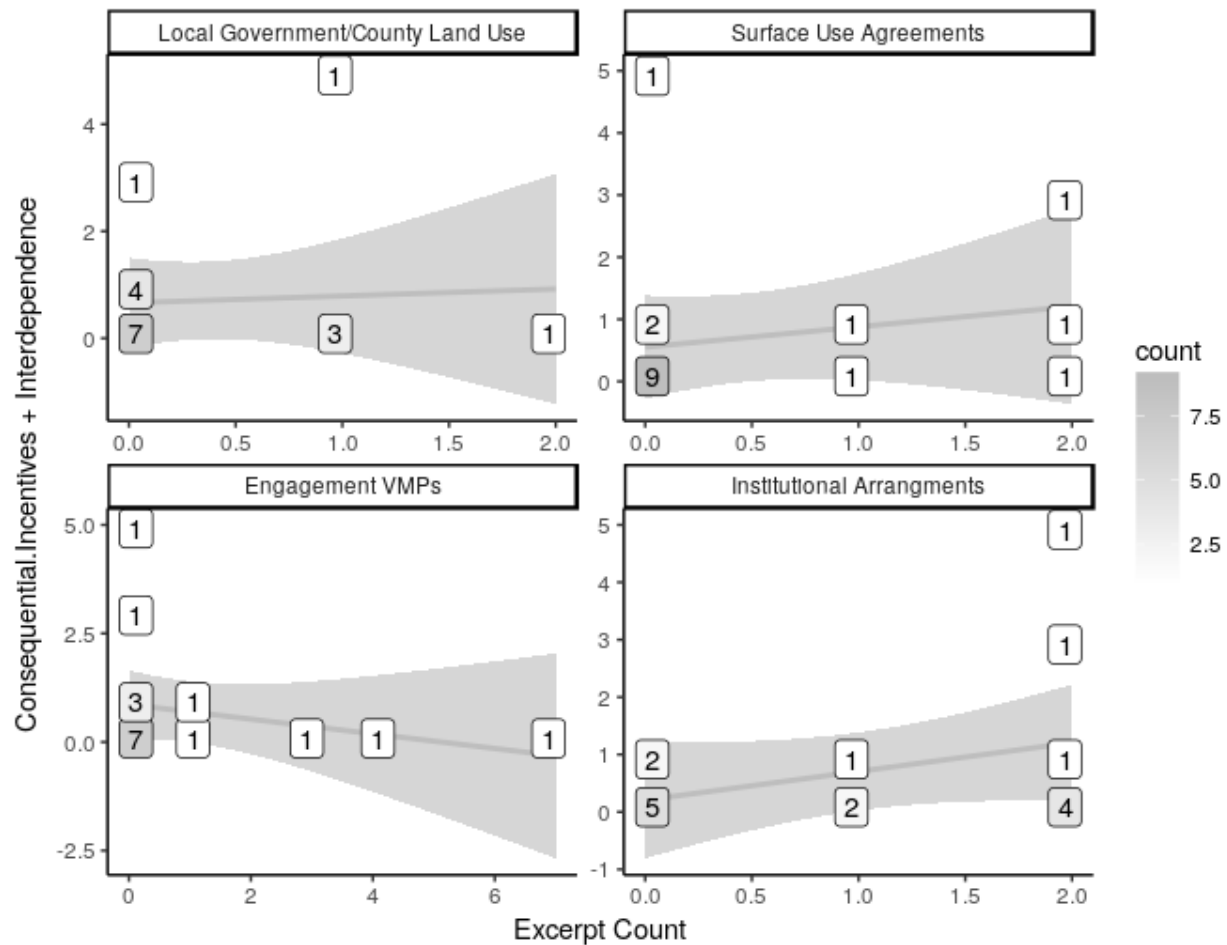


Figure 5: Institutional arrangements counts (x-axis) in relation to consequential incentives and interdependence of actors (y-axis). Linear regression fits and 95% confidence intervals are shaded in grey with binned case counts represented in the numbered blocks. Overall, as more institutional arrangements occur, the count of consequential incentives is also higher though no specific subtype of arrangement demonstrated a statistically significant relationship (a flat line can always fit within the grey shaded region).

The power to engage via the complaint process beyond simply correcting violations is largely left to firms in addressing complaints. While COGCC can pursue engagement with residents alone, accomplishing changing practices on the ground demands action of firms. Where no official violations occur, changes to these practices are voluntary. The structuring of incentives towards making principled engagement beneficial to firms is critical in promoting

thick engagement. Other factors such as interdependence are primarily driven by the nature of the incentives facing firms which are fundamentally tied to the legal parameters surrounding oil and gas extraction in an area. If a resident has surface rights or his or her local government has an ability to voice opinions on firm actions, he/she or the local government can incentivize firms to address resident interests by withholding agreement or approval or by threatening future withholdings. In the next section, I provide three cases to illustrate the importance of institutions and incentives in shaping what occurs via citizen complaints.

Cases

5.6.1. Use Agreements with Landowners: The Case of Huerfano County

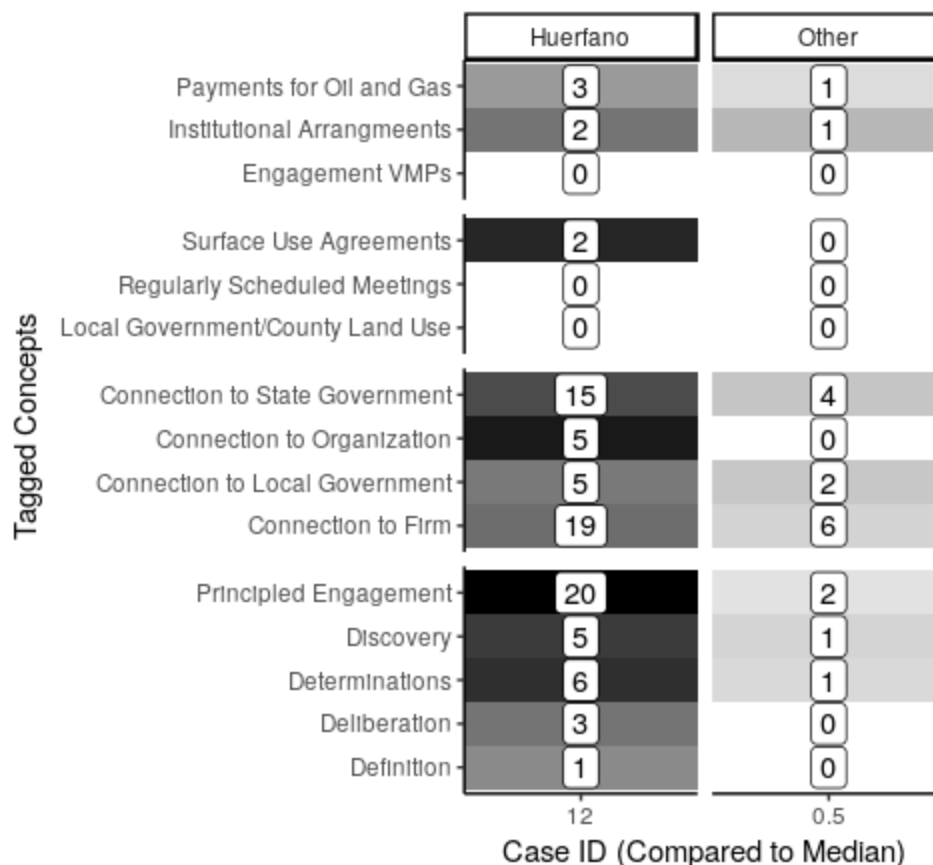


Figure 6: Excerpt counts for Interview 13 compared to the median counts for all other cases.

Huerfano County is located in Southeastern Colorado— the complainant I contacted in the Huerfano county was a surface rights owner of a ranch where the Bureau of Land Management had leased mineral rights to a company. While the complainant had a longstanding relationships with oil and gas companies owing to signing of a previous lease with another oil and gas company, a new company had taken over operations on her ranch and the relationship had soured. While some of the disagreements about operations were compounded by a conflict with ranch tenants and with subcontractors, the complainant felt that the company was failing to properly respect her property, was threatening the safety of her water supply, and had degraded the natural landscape.

When planning to develop the surface area, the complainant and the operator had driven around the site and discussed plans early in the process. However, once development commenced in full, including the logging of land, the complainant deemed cleanup and maintenance inadequate and did not think she had agreed to what occurred on her ranch. Her conversations with the company led her to believe that they operated behind her back and failed to understand or appreciate the issues at her ranch. Fearing for her property, and at the behest of a member of a local concerned citizens group and the county's local government designee for oil and gas, she set up a meeting with COGCC about land use at her ranch. This initiated the complaint process.

“I met him (COGCC Employee) in Gardner and I had shown him some pictures and it kind of sounded to me when I got in my truck, oh boy did I do the wrong thing (thinking he did not listen)... So I showed him everything. He told me at the conclusion that I (he) needed to talk with personnel. He didn't elaborate what that meant” (Interview 12, 18317).

Despite previous disagreements with the company, the complainant reported that the investigation by COGCC improved the process. Following the meeting with the COGCC official, “COGCC came up and evaluated my complaint, they disagreed with them, they agreed with me that they left my property in terrible condition” (Interview 12, 9941). In the meantime, COGCC had contacted the company about permit timelines and actions taken via email and also sent down a site investigator. Based on the complaint, Huerfano County contacted COGCC about enforcement of the land use application the county had approved and the relative role of COGCC in enforcement. The noxious weed policy handed down by the county, for example, was not followed on site— an allegation made known through the complaint. Ultimately, the COGCC levied a violation on the company for beginning construction before a permit was approved, but this was only one aspect of the complaint. The complaint filing made COGCC and the county aware of the issues at the site. At a public meeting about other well sites, the Huerfano County commissioners advised the company that they “should act as good neighbors” (County Document, Date Omitted To Protect Complainant Identified in Discussion). Part of the value to the complainant in filing the complaint was that the county planning board had to approve the use permits at the site. If the meeting left the impression that the company was not attempting to be a better neighbor (citing the complaints), Huerfano County and COGCC might limit the company’s future operations.

This coercive action coincided and potentially motivated thick engagement as at the same time the company began to engage the complainant more directly. Contact originated with the complainant, who hired an external expert and “went down to to meet with (Manager name omitted) because of all the problems” (Interview 12, 27950). She told me, “I wasn’t a very nice

person. I used some choice words,” but the result of these meetings combined with COGCC and county actions was the beginning of a functioning relationship. Later “He asked me (unintelligible) to dinner with him and we kind of agreed that we could we could try to see if we could work together.” (Interview 12, 27950). The day after my interview with the complainant, she was attending an onsite meeting with the manager to discuss new issues she had discovered at her ranch.

The formation of what she called a “partnership” typified principled engagement—subsequent events demonstrated the properties of discovery, deliberation, and determinations required leadership on the part of the company to move forward towards principally engaging. Official complaint documentation reported all three groups— COGCC, the complainant, and the company discussed issues together and considered ways of developing the resources while honoring existing contracts and the complainant’s value for her ranch.

However, the company had to be motivated by enforcement actions of COGCC, which were then cited by the county as evidence of bad faith. The complainants surface use agreement with the company meant that she had a legal role in the permitting process between the county and the State, which gave her standing in informing the county’s decision to accept or reject permits on the site. Rather than simply voicing her concern, the complainant was able to use the complaint process to bring COGCC and Huerfano County as potentially judicial actors into an ongoing conflict over mineral development and surface use. About the company and their response to contacting COGCC and her filing of a complaint, the respondent stated that,

“I think that they kind of want to have a clean slate and be able to do it be able to perform their jobs the right way and not get in trouble and not have COGCC come in and point out violations and discrepancies in their operation down there.” (Interview 12, 26371).

For the complainant, the complaint was a turning point in the existing relationship. It brought the threat of COGCC acting as a judge on existing rules and agreements. In essence, the efforts of COGCC in Huerfano County were to support proper fulfillment of contracts not to investigate environmental issues. COGCC, rather than simply monitoring for compliance, took on the role of an adjudicator—their participation in the process served as motivation for principled engagement between the firm and the complainant.

Because the county could make permitting other wells more difficult, they were able to put pressure on the firm to engage with the resident to solve issues. This pressure, combined with the interdependence foundational to split-estate mineral ownership, created an incentive for action as the complainant could have made future contracts more difficult if her values were not addressed. Thus, both individual contracts and the county's ability to enforce contract provisions (even if they only surrounded weed control!), were critical in the development of thick engagement in the remedying of the complaints.

While the case of Huerfano County provides an example of individual contracts intersecting with the potential for local government action, the next case, one from Western Colorado, illustrates how governments can intervene even when citizens do not have mineral development rights.

5.6.2. Use Agreements with Local Governments: The Case of Battlement Mesa

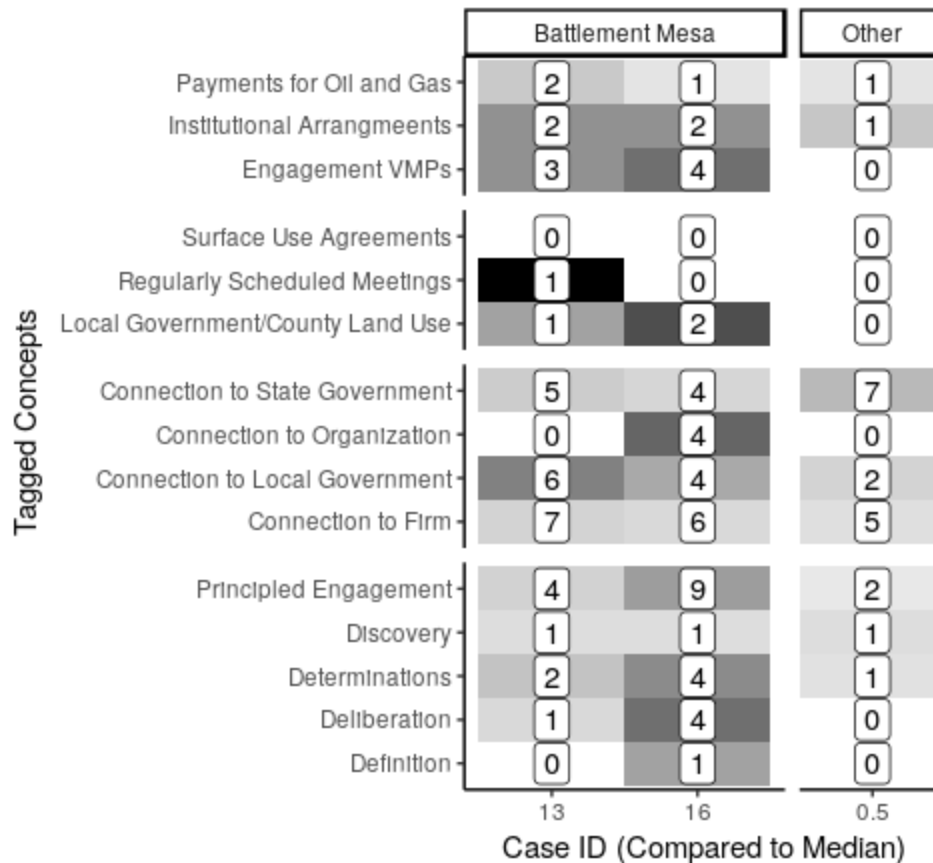


Figure 7: Excerpt counts from Battlement Mesa interviews compared to the median of all other interviews.

Battlement Mesa, Colorado sits on I-80 as it follows the Colorado River through the western part of the state. It has been a hotbed of oil and gas development since the 1970s. The current shale boom in Colorado is not the first— a previous one in the 1970s and 1980s created a temporary boom of development in Western Colorado, bringing jobs and resources to Garfield County which ended abruptly. In 1982, Exxon pulled out of the Grand Valley on what has been called “Black Monday”. The planned company town, Battlement Mesa, was left half-built with amenities such as recreation centers, stores, and carefully planned streets. Exxon had built Battlement Mesa as a planned unit development (PUD) which granted Exxon land use variances in exchange for the right of the county to agree to changes to the initial plans (Colorado Chapter

of the American Planning Association 2012). Thus, a previous oil event created an institutional arrangement that did not exist in most parts of Colorado. Even in Huerfano County (above), the County was limited to approving weed control plans. The County could make permitting difficult and put provisions upon wells but ultimately they did not have jurisdiction over the choice to develop a site or not— this instead was the jurisdiction of the state.

The original boom also led to a professionalization of local government as Garfield County faced rapid industrial development and needed a professional staff to conduct mitigation and assessment efforts (Jacquet 2014). When gas development began again in the early 2000s, despite its rurality, Garfield County had the resources to quickly initiate an Energy Advisory Board which connected local government and citizen representatives to oil and gas companies managers. In 2003 a Comprehensive Drilling Plan (CDP) was established for some nearby communities ensuring ongoing led to continued engagement in the communities of Rifle, Silt, and New Castle. Thus, public engagement in Battlement Mesa was an ongoing corollary to development and did not arise from anger over hydraulic fracturing.

In 1989, the Battlement Mesa Partners purchased Battlement Mesa from Exxon and began advertising the site as a retirement community. With the sale the entire PUD of Battlement Mesa became a split-estate property as Exxon retained the rights to the minerals underlying the town (Olinger 1997). In 2009, ExxonMobil sold its rights to Antero Resources (D. Webb 2015). In May of 2009, Antero sent a letter to the local homeowners association, expressing their intention to begin drilling within and under Battlement Mesa. However, because the county retained the right to grant special use permits to land uses that were not established within the original PUD, the initial county approval of the PUD provided an avenue for community

involvement in negotiating the development of the area. Antero, and later Ursa, who bought Antero's drilling rights, adopted Voluntary Management Practices (VMPs) that were previously used in the CDP from Rifle, Silt, and New Castle. Some of these VMPs promoted community engagement as part of the process of managing well sites. For example, one VMP adopted by Ursa at a location is:

“Ursa routinely communicates proposed plans and operations schedules with Community Counts and the GARCO (Garfield County) Energy Advisory Board. In addition, periodic stakeholder meetings are held with landowners and affected parties” (Form 2 #422286, 14463).

However, after well construction began complaints still occurred— two of my interviews were with Battlement Mesa residents and I also met with the head of the local concerned citizens group about the group's efforts within the PUD. In the case of both complainants, the individuals attended community meetings held by Ursa, and both expressed that determinations had been reached as part of the engagement process. While drilling is still being planned and discussed for Battlement Mesa, “... they are asking the Ursa industry, the Ursa company, they have to do a lot of mitigation” (Interview 16, 18439). Complaints, combined with citizen engagement helped to change practices.

“It's because we would go to the meetings. The county commissioners meetings and we would write letters, we would actively send in complaints, Fill out these forms and then (name omitted) would turn them over to the Colorado Oil and Gas Commission. And we were just we would insist on community meetings we wanted to know what Ursa was doing so they've been good about having regular meetings. And they say they tell us what they're going to do and we tell those them what we would like to have them do and then they do what they say they're going to do except the fact that we got that county zoning and planning commission and the commissioners” (Interview 16, 22137).

While Ursa held community meetings, engaging in the complaint process enhanced the ability of local residents to understand the nature of oil and gas in a way that enabled them to better suggest mitigations through the organization they formed—the Battlement Concerned Citizens (BCC). The BCC leveraged existing engagement practices to make complaints an effective tool within deliberations. To ensure all complaints were documented, the BCC developed a complaint system which streamlined reporting to both the county and the State. This was a method of not only correcting harms but collecting information and documenting where potential harms may be occurring (Conversation with BCC Member, October 2016).

“So that's why we developed a log to describe what you were smelling. When you smell that what direction was the wind? How long did it last? How did it make you feel? And all of those things. Then (we) began to realize, well, this is what we really need because we need to be able to say these things are happening. And they happened at this time. And if you call, and there were some numbers, we could call, a complaint number, then if you call a complaint number then maybe we'll get an answer to what's happening and what it is you're smelling. Because what we were looking for was information. What's causing these odors? What are they? Are they good for me?” (Interview 16, 26670).

Complaints about impacts proved pivotal in informing decisions by providing documentation of impacts. Those in Battlement Mesa and elsewhere in the county helped to motivate the Garfield County Air Quality Study (Jacquet 2014), and resulted in active investigations by county oil and gas liaison Kirby Wynn—a broker who built trust with both citizens and corporations as someone who was interested in development but also in protecting the rights and concerns of local residents. Ultimately, these complaints served as a strong signal that oil and gas rights would continue to be an issue. Thus, the determinations made via engagement in Battlement Mesa were enhanced by the knowledge creation and sharing facilitated by filing complaints. Notably, as far as the filing of complaints was concerned, neither

of the Battlement Mesa interviewees reported effective responses from the State. Instead, local benefits were achieved by formally documenting where impacts were occurring to local residents. These impacts mattered because of agreements signed between Exxon and Garfield County in the 1970s which gave Garfield County purview over the issuance of conditions of approval, which it would not otherwise have had. Based on a review of local documents and the conducted interviews, these procedural arrangements, combined with a well-informed citizenry who actively reported issues and raised awareness of problems at oil and gas sites, helped to motivate Ursa to adopt enhanced mitigation practices and continued strong efforts at community engagement. A combination of institutional rules and political realities of complaining appear to have helped to promote change.

“It wasn't so much of us working with the commissioners. It was just that the commissioners felt like this would pacify us enough. Well, I think you know because they're, you know, they are elected officials and (they) just kind of smooth things over, make things happy, while continue bringing the money in for this area. I think the other thing is that was concerning them is they are not fools and they do know accidents do happen” (Interview 13, 24622).

5.6.3. Where Public Management Went Missing: The Case of Mead

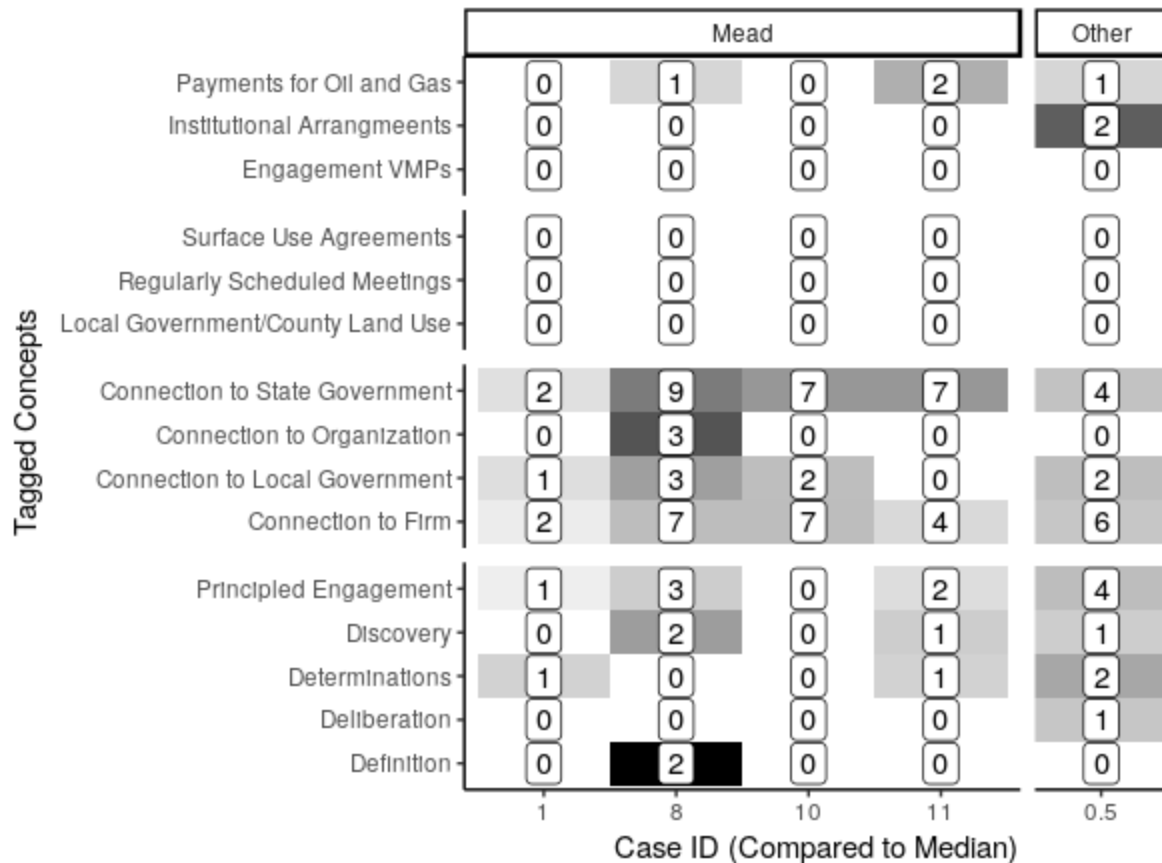


Figure 8: Excerpt counts in Mead, CO compared to the median of all other cases

While the same rules about oil and gas ostensibly govern the majority of the state of Colorado, the official local government engagement process in Colorado only engages those districts, towns, municipalities and counties that request notification or otherwise grant a surface use permit. In Weld County, and especially along I-25 between Denver and Fort Collins, seemingly random roads separate unincorporated Weld County from the ever-growing municipalities such as Lafayette, Mead, Windsor, Severance, Longmont, Loveland, Erie, and

Firestone. These Front Range communities have garnered much public attention as an area of conflict between the economic fortunes of oil and gas development and suburbanization of the Denver metropolitan area.

Of my interviews, half were with residents of Weld County— it and Garfield County (the location of Battlement Mesa) are home to the vast majority of unconventional gas development in Colorado and also to the bulk of the complaints officially filed with the State of Colorado. Based on interviews in Southern and Western Colorado, I soon became aware of the potential for engagement with county officials, not only State officials, as an important part of the citizen complaint process. This was not something I had anticipated in the design of the study. Four individuals I interviewed lived within the official boundaries of the town of Mead, population just under 3500 (DeNavas-Walt, Proctor, and Smith 2010).

Of oil and gas locations with complaints, two sit in urban mitigation areas which meant that additional voluntary management practices about how to mitigate noise, traffic, and planning issues were adopted at the location as part of the permitting process. However, unlike in Battlement Mesa, none of these provisions governed community engagement. Of the citizens I interviewed in Mead, two partially achieved their intentions in filing a complaint. One did not recall the complaint being filed. The final complainant reported that the complaint process, though informative, was generally ineffective in helping to solve problems. Unlike in the above case of Battlement Mesa, there was no notification of citizens prior to the commencing of the drilling process and none of the four respondents knew of potential to engage the firms through contacting local officials during the planning process. Three of these four cases are described earlier as instances where the residents and firms never engaged with each other.

Officially within the state of Colorado, companies notify local government designees of permit applications, initiating a public comment period about potential land use changes. While companies put up signs at sites, these signs look identical to signs for new subdivisions.

“As far as what was going to happen on that site because there was a white sign out that said, this is some proposals (that has) been made for this property. It was not clear it was going to be an oil drilling thing or anything. It could have been house building probably. And in fact they moved the house from that lot so I thought, well, maybe they are just building another house there. So, until the day they bring this stuff out, and then oh, It's not a house...” (Interview 11, 28540).

When such signage is the notification for land use changes, it requires the citizen to contact their local jurisdiction to file comments about oil and gas development plans. However, the site this complainant discussed was just across a municipal boundary from the town of Mead. Thus, while the complainant I interviewed lived within the city limits of Mead, the wellsite was in unincorporated Weld County just across the street. While the respondent postulated there had been city meetings, there never were any held by Mead about those sites as they were not within city limits but fell under broader county-level jurisdiction.

In another case, the nearby landowner bought the property next to the wellsites simultaneously to the permits being approved by COGCC. Notification might have fallen to the realtor or the seller who had previously sold the mineral rights under the development prior to selling the land to the homeowners. So in this case, notification would have easily been missed. At the third Mead well site, the primary complainant lived just over 500' from the well's official GIS location which at the time meant no notification was mandatory. When the permit was filed, there was no obvious notification of any public entity other than the designee for Weld County—

a county notable for its support of pro oil and gas development policies. All four individuals in Mead described filing a complaint as ineffective at addressing the issues at the well sites.

The legal standing of these local landowners compared to nearby surface owners meant that none of the four individuals in Mead received prior notification about activities and there was no initiative to engage their local governments in the process. Unlike in the cases of Battlement Mesa or Huerfano County, there were no pre-existing institutions creating official ties between firms and residents which complaints were then able to leverage. Where citizens complained, a COGCC investigation occurred and actions did take place and yet residents perceived these changes as small relative to the burdens of sound, vibrations and odors. The patchwork nature of local government jurisdictions in Weld County complicates the citizen participation process, and individuals I interviewed in Severance, Firestone, and Windsor all expressed there was no person in local government they could turn to despite the legal existence of such entities. Complaints thus only passed between citizens and the COGCC without there being a credible local principal for influencing firm practices. There were a few notable exception to this finding within Weld County and none occurred within Mead. In the town of Erie, CO complaints were leveraged in communications with local government officials because the operating company had agreed to address complaints and issues as part of a voluntary agreement with the city of Erie. Moreover, two individuals with mineral and surface rights were able to use complaints to force action but these individuals had standing to actually influence what actions were allowable on their property.

Complaints And Thick Engagement

Even if complaints do not always produce satisfactory outcomes for citizens when used as a monitoring device or where complaints fail to themselves promote enhancements to the existing engagement processes, complaints can serve as a method of bringing coercive power to existing relationships to force firm action.

At the very least, complaints create a formal record of actions. They naturally create thin engagement between firms and the regulator and then the regulator and citizens. But they also, sometimes, can foster thick engagement primarily between citizens and firms. This, based on the 3 summary cases and the 17 interviews, happens when the filing of a complaint can incentivize firms to principally engage by involving a regulatory body with coercive power in ongoing conflicts, when the firm is dependent on the approval of the person who files the complaint. Both of these processes rely on coercion. Essentially, where firms chose to engage beyond simple communication, there is almost always an formal institutional structure that makes this action either beneficial or required even if the engagement response to the complaint is adopted voluntarily. Evident here is a lack of self-motivated commitment to engagement by individual firms. This was especially emphasized by citizens' perceptions of direct contact between themselves and firms as less effective than contact that involved the regulator.

Regardless of which part of Colorado the complainant lived in or which company they were addressing, all complainants who had engaged direct methods preferred filing a complaint alongside or right before direct contact, not only because it allowed for the potential for the State to levy a fine, but because it created a public, administrative record of harms that would not otherwise exist. About contacting firms and the state one complainant said the following:

“If you don’t do it in the correct order it never gets recorded, it never gets to the state, it never gets to the Oil and Gas Commission. Turns out you have to report it to them specifically... They always say report it first to the company. That’s the worst thing to do. You first report the the Colorado Oil and Gas guy because that way there is a chance he might see it. That’s the order on the fridge.” (Interview 13, 37459).

Moreover, while procedural arrangements were not necessary for the processes of principled engagement to occur, they were critical in motivating principled engagement as an outcome of the complaint process. To be clear, principled engagement between residents and firms did occur outside the complaint process and among those who did talk directly to firms and managers, the complaint process rarely served as the initiating mechanism for that connection. Yet, filing complaints changed that relationship by bringing a potential regulator into existing firm-resident relations.

Discussion

The Roles Of Complaining And Institutions In Moving Beyond Thin

Across my cases, I find the existence of formal surface use agreements and local government code approvals create a pathway towards principled engagement and deliberation, which, involvement of COGCC is often able to force through coercive pressure on the firm to act in good faith. While surface use agreements exist in some cases as a legal document between a surface owner and the mineral extractor, cities and counties also play critical roles as arbiters in surface use. Cities and counties can request notification by firms when they are drilling within an administrative boundary and the jurisdiction and they often control local development ordinances that govern small aspects of oil and gas development in Colorado such as appearance of wellsites and impact mitigations. Where such provisions are missing, complaints never produce thick

engagement in my sample. In the sample, thick engagement is most likely when there is an institutional demand on firms. The three cases highlighted illustrate how the presence and absence of procedures and institutions that make engagement valuable to firms are fundamental in moving complaints from thin to thick.

Firms are not choosing to engage merely in response to complaints but instead, where principled engagement occurs complaints are part of a larger relationship that exists between citizens and firms. This might indicate that complaints themselves are not naturally a thick engagement process but sometimes occur during thick engagement processes. Where engagement was already underway, and where there were consequential incentives that made firms dependent or immediately subject to resident perspectives, complaints became a matter of integrating the state agency into engagement process or providing awareness to other actors with coercive powers about how citizens were impacted by firm activities.

The technical nature of oil and gas also meant that sound tests, water tests, and air quality tests were commonly used to investigate complaints. Officially, for any air, water, or sound complaint a study is required. These official tests rarely served as evidence of a violation on the part of firms— in only five cases in my sample were there any violations identified and none of these were due to noise or water while two were related to odor but not the resultant air quality test. Even among residents who had engaged with companies either before or as a result of the complaint process, principled engagement rarely developed around environmental studies. Use of such studies follows a common pattern of analyzing the air/water/noise, letting the firm know about the complaint, and letting the resident know the firm would adjust practices and install mitigations or that nothing was found via the study.

This general pattern of noise and air complaints remaining “thin” in terms of a complainant’s ability to motivate enhanced engagement is problematic, given that risk scholars tend to emphasize analytic-deliberative processes.⁶ However, the presence of analysis in evaluating complaints at oil and gas sites was not at all predictive of “thick” engagement as evidenced by the fact that each of the cases with no engagement other than between the agency and the resident involved use of technical analysis to test the validity of these complaints. Even in the nine cases where interests were addressed having interests met is not synonymous with leaving a process satisfied. Meeting interests and understanding resident motivations, values and concerns are ultimately two very different aspects of remedying complaint situations. As one resident told me,

“Well yeah they made improvements along the way but it was a real fight so you know they just couldn’t seem to understand why I was so upset.” (Interview 2 line 22560).

As a result, these complaints that lack principled engagement may actually lead to people complaining less as the creation of technical knowledge does little to address concerns that citizens may have. Keeping engagement as thin as possible may actually benefit firms in these instances, as citizens who are engaged in only a thin manner may be most likely to exit the complaint process. This would altogether limit the need for reductions to sound impacts and reduce the threat of complaint-related inspections. Complainants who fail to have their interests met within the COGCC complaint forum may be most likely to not complain again but instead may seek some other form of action, especially since complainants have little recourse outside of motivating the State or the firm to take action.

⁶ See (Rosa, McCright, and Renn 2013; North et al. 2014).

Citizen perceptions of filing a complaining as an effective process were greatest when the complaint itself could be used as evidence within relationships with firms and regulators rather than as a method of monitoring. This view of citizen complaints as a method of creating records of information for public managers is not currently discussed within the literature on public complaint forums (Warwick and Ortolano 2007; Weersink and Raymond 2007; Goeschl and Jürgens 2009), though it is a proposed reason for citizen-led science (Conrad and Hilchey 2011; Brewer 2007). What stands out about the COGCC complaint forum is it provides an avenue for voicing and recording concerns or potential issues. It is not scientific measurement but this does not mean its records and processes are not useful. The recognition that bringing a state-level complaint can enhance abilities of local governments and individual landholders to share values and interests highlights the importance of maintaining complaint system even if regulators themselves hold bias (Opsal and Shelley 2014).

Hypotheses: What Thickens Participation?

Given the above analysis, three hypotheses emerge defining how the engagement process of complaints can be transformed from thin to thick. A major success of the complaint forum is that it brings government into existing conflicts and firm-citizen engagements. When agreements formalized official relationships prior to any issues taking place at drill sites, management, the complaint process served as an avenue of last-resort for leveraging the coercive pressure of COGCC into upholding the provisions of the relationship.

H1: Agreements and procedural arrangements that give citizens or governments legal standing in planning and procedures are more effective at promoting thick, principled engagement because they can provide a coercive incentive for engaging with citizens.

Previous perspectives that complaint systems are ineffective may have ignored this role (Warwick and Ortolano 2007; Goeschl and Jürgens 2009, 2012). Complaints are also a method of collecting information for discussions with companies. However, they do not appear to be an effective method of monitoring or identifying violations.

H2: Complaints exhibiting thick participation do not initiate contact between the firm and citizens.

H3: Instead complaints bring government (either state or local) into the as a third party between firms and residents.

In terms of the potential for engagement to shape perspectives, very few individuals expressed that engaging with firms either through complaints or otherwise changed their perspective on oil and gas development or their attitudes about local wells even if they felt connecting with oil and gas companies was effective. Thus, an important finding here is that actions by firms to appease citizens such as installing sound barriers or limiting traffic may do very little to change wider perceptions of nearby oil and gas development or the nature of oil and gas companies as local stakeholders.

H4: Discovery and shared definitions are unlikely to emerge when engagement is coerced or mandated via institutions yet firms lack a strong internal motivation to principally engage.

In cases where scientific studies are used to assess if resident complaints are valid, it follows that the thick engagement would rarely result from the findings, especially if the findings

support the continued actions of the oil and gas companies. In the one case in my sample where water damage, for example, was proven, engagement between residents and firms was passed onto lawyers rather than local residents. A challenge emerging from analysis of my sample data is that scientific proof of environmental damage or lack of damage does not consider the values or specific issues that may drive complaints, but instead provides a yes/no answer to whether a complaint is legitimate on scientific or regulatory grounds. Thus, residents who were presented with scientific information were generally displeased with the complaint process as they felt it did not address the real issues they faced.

H5: Where the legality of firm actions are supported by scientific study but impacts are still unacceptable to residents, complaints and deliberation will be less likely.

CONCLUSION

In the 17 cases in this study, rules, both formal and informal, structure incentives for firms to engage with residents and ultimately serve as the primary impetus for making engagement via complaints a thick process involving firms, residents and the state oil and gas agency rather than a one-way pathway of communication between residents and the state and then firms. While states could mandate communication between firms and citizens and set strict regulations in an attempt to minimize citizen complaints, they ultimately leave firms much flexibility— this means the complaint process should be considered in governance since some complaints are to be expected (Leonard 2016). “Governance involves not simply tools but also practices and processes for people to participate in the work of government” (Bingham, Nabatchi, and O’Leary 2005, 548). This definition of governance makes clear that governance should not only involve the role of government actors in creating policies, but how

non-governmental actors can take part in the process of governing. Through addressing complaints, citizens and firms are able to engage and create policies that reflect citizen concerns and yet still meet firm needs; however, this thickening of engagement through meaningful consideration of resident interests requires institutional frameworks that make engaging with residents potentially beneficial to firms. Such structures, however, will not necessarily promote consideration of resident values within debates. Even where they exist they may focus on how to minimally address resident issues while failing to consider resident values.

Thus, while public deliberative processes are widely cited as part of the solution to the conflicts between residents and oil companies (North et al. 2014; Wheeler et al. 2015), they should not be taken to be a panacea. Instead, the achieving the benefits of such policies such as learning about resident issues and values is dependent on the institutional context and motivational factors present, which shapes the willingness of firms, residents and other stakeholders participating in the process.

In these cases here, where noise or air quality studies failed to identify impacts and residents did not have government agents acting on their behalf, such as in Weld County, there was little rationale for companies to work with residents. In the cases here scientific studies of impacts were almost synonymous with thin engagement. Furthermore, the conveyance of null findings may decrease complaint behavior as the studies did not consider resident concerns so much as regulatory compliance.

This does not mean complaints were useless, however. Firms often did respond to complaints even if residents did not think they did so satisfactorily. However, responding to complaints is far different than demonstrating a meaningful interest in resident concerns. This is

something that nearly all residents identified as lacking in firm actions. Even where engagement does occur, since firms do not necessarily understand the values of residents, the depth of engagement that can occur through the complaint process is limited. While I do observe deeper engagement characterized by consideration of the concerns residents faced, the indication here is that engagement between firms and residents could be deeper if firms were given a true motivation to understand resident values and take actions that recognize those values as legitimate and understood.

One of the elements of the Garfield and Huerfano County cases that continues to stand out is that in the thickening of engagement, a fourth actor— local government— also played a role in facilitating resident engagement and firm engagement with residents. In each case while the State provided an impetus for coercion, local institutional rules and the actions of local governments were critical in shaping the willingness of firms to move beyond one way communication with the State agency and instead, directly engage with residents. In Colorado, the nature of institutions for managing risk have been hotly contested through efforts to move the power to regulate wells from the State to localities (R. Webb 2016; Neese 2005). As localities may be more proximate to oil and gas sites, this change could help to obviate some problems of citizens knowing what government jurisdiction to turn to for regulatory relief from oil and gas. However, it also could mean citizens might be subject to the whims of local governments reducing local development such as happened across New York state prior to the state-wide ban (Simonelli 2014). Because localities could establish strong surface use rules, local control may increase involvement of local governments in regulating risk. However, notably, counties need not be given complete control over whether wells are allowed for thick engagement to develop.

In both Garfield and Huerfano County, managers were able to leverage specific areas of control towards motivating thick engagement between residents and firms. While engagement predated the complaints, complaining itself brought those institutions to bear— increasing the pressure on firms to move towards determinations that reflected resident interests. Thus, even though engagement here primarily occurs between firms and residents, one of the lasting conclusions of this paper is that local government managers can play a role in governing oil and gas.

From some perspectives, engagement between residents and firms may be seen as a private issue of business and not a public policy process, however, because states have delegated so much control over oil and gas development to firms, we should continue to consider how our institutions encourage or inhibit resident involvement in the process, especially because when issues occur, both state and local managers must re-engage in the process for citizen interests to be addressed. By only focussing on unambiguously public processes we may be ignoring the larger picture of governance. We are missing the roles of private actors in building processes that help to achieve public outcomes (Bingham, Nabatchi, and O’Leary 2005, 548). The engagement of firms via the complaint process in the above instance, motivated by local institutional arrangements, makes clear that what otherwise may be private actions can play a critical part in shaping what happens through the complaint process and thus the scope of citizen engagement in oil and gas policymaking.

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Conclusion: The Importance of Public Actors, Private Motivations, and Citizen Action in Engaging Voluntarily and Via Complaints

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INTRODUCTION

Governance of mineral extraction is challenged by a complex interaction of private interests and public goals bringing potential benefits and risks (Moteff and Parfomak 2004). From a public policy perspective, resource development can bring local economic windfalls through taxes and reinvestment; however, it can also foment property rights conflict, environmental and social harms (Hardwicke 1935; Christopherson 2012; Libecap and Wiggins 1985).¹ In the United States, individual states create rules governing mineral extraction. These rules are largely maintained through permits (Steve Souders 2005). While oil and gas permitting rules range in their permissiveness (Brady and Crannell 2012a), all US states where extraction occurs maintain official permitting processes in order to protect property rights (Hardwicke 1935). These permits were intended initially as a method of managing property rights dilemmas created by the fact that drilling at one drill site affects productivity and available oil and gas resources in neighboring drill sites. However, they also provide a mechanism for addressing social and environmental concerns of gas development.

¹ Governance is made up of “laws, administrative rules, judicial rulings, and practices that constrain, prescribe, and enable . . . the production and delivery of publicly supported goods and services” (Lynn, Heinrich, and Lynn 2000, 235; Emerson and Nabatchi 2015).

Alongside individual use agreements and memorandums of understanding which firms may sign with individual landowners or local governments, the filing and approval of drilling permits creates binding rules that govern surface and extraction rights. However, these rules are dependent on the practices selected by firms and encouraged by the state government and or local actors. As a result, individual citizens, governments, and firms often have differing responsibilities and rights at different locations throughout the same state (Brady and Crannell 2012b; Milt, Gagnolet, and Armsworth 2016; Eaton and Kinchy 2016). By leveraging this variation within the state of Colorado, this dissertation was able to characterize how a suite of voluntary engagement practices adopted by firms failed to promote changes in citizen complaint behavior, demonstrate potential drivers of voluntary practice adoption amongst firms, and form hypotheses about citizen perceptions of oil and gas as well as official rules and voluntary processes shaped engagement processes.

CHAPTER SUMMARIES

Chapter 1 assessed the effectiveness of voluntary practices promoting engagement at reducing or altering complaint behavior. In doing so, it applied the expectations derived from the Risk Governance Framework that involving actors in the risk management process would increase acceptance of management policies (Small et al. 2014). Because not all forms of engagement are created equally, I relied on definitions of collaboration and deliberation drawn from Collaborative Governance Regime's framework to separate out those voluntary practices that possessed the properties of not only engagement but also deliberation around risk (Emerson

2015). Deliberation, in this paper, refers to discussions or interactions whereby residents perspectives were allowed to influence policy decisions.

Despite my theoretical expectation that firm adoption of voluntary practices (VMPs) would reduce complaint odds, the model failed to support that conclusion. Greater adoption of VMPs in general was associated with higher odds of complaints— an unsurprising relationship given that firms may adopt VMPs based on coercive and public pressures. Neither engagement nor deliberation led to significant model results in predicting the odds of citizen complaints. Yet, where engagement and deliberation were used, the association of VMPs with higher complaint odds was significantly reduced. Much of the failure to identify a clear relationship between engagement and deliberation and improved complaint outcomes may also result from the finding that large, resourced companies adopted more engagement practices.

In Chapter 2, the question was not the effect that VMPs might have on reducing policies, but instead, what motivations can cause firms to engage in new voluntary practices. Chapter 2 tests motivations derived from a sociological institutionalist perspective on firm motivations (Delmas and Toffel 2004; Dimaggio and Powell 1983). By including complaints and other forms of negative feedback to firms as potential information sources, I evaluated the ability of firms to learn from complaints as as part of a collaborative learning process (Daniels and Walker 2001).

None of the information sources tested were statistically associated with firms adopting new VMPs. Among the tested motivations, coercion was identified as potentially lowering odds of new VMP text when firms adopt text more like those of agency mandated conditions of approval. Yet coercion measured via counts of conditions of approval is associated with higher change odds. Among other pressures, normative pressures originating from within the oil and gas

field were associated with lower odds of new VMPs. Firms most unlike the rest of the firms had higher rates of VMP change. While the effects of uncertainty in motivating change are ambiguous, one of the findings from Chapter 2 that is exciting for future research is potential relationship between increased counts of passed inspections and higher odds of VMP change. Overall however, well-specific variables were more strongly related to practice change than inter-site characteristics. One of the challenges that emerges in Chapter 2 is that firm motivations, information sources, and well-specific variables are potentially strongly connected. Information sources such as complaints do not just provide knowledge to firms, but they also can structure the incentives firms face. This is a relationship that was further explored in Chapter 3.

In Chapter 3's assessment of what processes produce citizen complaints about oil and gas, the major conclusion of relevance for policymakers and researchers alike is that proximity and intrusiveness are key driving perceptions of the threat of oil and gas. Moreover, these perceptions are shaped primarily by environmental cues demonstrating potential impacts. Citizens translate environmental cues as threats primarily to their health or property not to their wider communities indicating the choice to engage in complaining is undertaken primarily as an individual protective behavior. However, for individuals who were engaged with companies and governments in ways other than through the complaint process, the understanding of complainings value was different, and I find that where engagement practices exist complaints may have a higher perceived efficacy, and they can be used as evidence within engagement processes giving complaints a collective purpose.

In Chapter 4, I find that complaints foster engagement when firms face institutional structures that provide incentives for meaningful discussions with complainants. This occurs in

cases where complaints can serve as a piece of evidence for local governments or states enforcing existing institutions. As a result, efforts to move management of oil and gas more locally may be effective in motivating firms to engage at wellsites. However, I also find that citizen complaints do not commonly align with regulatory rules, meaning that complaints may have limited value as a monitoring method, but are potentially useful as a method of identifying conflicts and enforcing non-standards based use agreements.

KEY FINDINGS FOR POLICY, MANAGEMENT AND GOVERNANCE

While the individual findings of each chapter are intended to inform different theoretical literatures, the combined lessons also share a number of common themes which should inform how governments structure policies for extraction of minerals.

1. Firms are not currently learning the listening of complaints unless they have a specific institutional motivation driving action.

When I began this project I was more excited by the prospect of studying engagement VMPs and their potential to impact complaint behavior rather than the study of how complaints, themselves can structure or be influenced by existing conflicts and deliberations. When I completed Chapter 2 and found that firms did not appear to learn from complaints, combined with the finding that adopting engagement VMPs did not reduce complaint behavior or promote changes in the kind of complaint, I entered the conduct of my interviews for Chapter 3 with the perspective that complaints may not matter much at all for informing company decisions for addressing resident concerns.

2. Complaints can themselves form a kind of engagement process

Chapter 3 and 4 demonstrate that complaints are dynamic, possessing different purposes depending on the institutional context in which they occur and as a result complaints themselves can become a method of engagement and facilitating deliberation rather than simply providing a method of gathering information and evidence for use in engagement. Thus, it is not necessarily the case that reductions in complaints are unequivocally reflective of improved management.

This finding ended up contributing to how I viewed complaints throughout the final versions of Chapters 1 and 2 not just as a signal but as a participatory process involving residents, firms, and the governments.

3. Despite the fact that learning may not be occurring, complainants still possess valuable knowledge about local risks of oil and gas development

Despite the finding that complaints did not lead to widespread learning by firms, my findings in regards to the processes citizens engage in when complaining demonstrate that complainants possess potentially valuable knowledge for firms and regulators. Complaints are real reflections of perceived threats and by listening to complainants and valuing complainant input firms and regulators could potentially reduce the perceived impacts of drilling. By this I do not mean that evidence itself is subjective or that policies should be made that ignore scientific evidence, but simply that scientific evidence alone will not promote sufficient risk management. Taking complainants seriously, and actively considering what could prevent future complaints beyond individual site-specific responses is one potential way of addressing this dilemma. This is

a finding that is supported by a broader literature on public policy and management as well as by the findings of this project.

4. Complaints may not help with monitoring

The work of Elinor Ostrom, and specifically her institutional design principles, highlights two aspects of sustainable management frameworks that complaints potentially inform (Ostrom 1990). First, complaints are a potential method of monitoring, and in Colorado at least the complaint forum is primarily designed as a monitoring mechanism. However, a key finding of Chapter 3 here is that complaints were not generally useful for monitoring because of the difference between psychological factors that lead to complaints and technical measures that lead to violations. Moreover, other work on economic modeling of firm responses to citizen reports in face of limited regulatory resources has demonstrated that the need to investigate complaints can reduce overall monitoring of impacts leading to overall welfare reductions as firms know which sites are most likely to be investigated (Goeschl and Jürgens 2012). Given imperfections in citizen science, only some of these reports are likely to promote positive findings of violations leading to lower effectiveness compared to random monitoring.

However, this viewpoint only values complaints as beneficial when are tied to identifying violation. This is not the same as complaints having no value to regulators or firms. In fact, the value of a citizen monitoring program such as air-quality bucket brigades is potentially very different than a non-media specific complaint forum (Goeschl and Jürgens 2012). First of all, complaints need make no mention of specific violations— they illustrate concerns which may or may not have a basis in regulatory rules or violations. Citizens I

interviewed recognized this fact, and it may have contributed to their perceived efficacy in complaining.

5. Complaints can serve to document perceived impacts especially when supported by institutionalized rules or procedures

Where there are property rights for complainants or credible methods of using complaints in future planning policy discussions, complaints can go beyond their monitoring purpose and in this way become more valuable to regulators. Here, a second of Ostrom's principles for governance comes into play, being that, "most individuals affected by a regime are authorized to participate in making and modifying rules" (Ostrom 1990). This is a sentiment shared by risk management scholarship and it is a central reason why risk communication and risk management are increasingly parts of the very process of assessing risks (Rosa, McCright, and Renn 2013).

Unfortunately, the evidence from this dissertation highlights that this learning from complaints is not widespread. Instead, learning from complaints happens when there are institutional rules or a coercive actor who can mandate firms listen to complainants or where firms have been coerced in some manner to adopt listening practices. Even where these are present, individual firms face a potential risk-benefit tradeoff in choosing to engage residents. Listening to complainants and working with state regulators can potentially lead to learning if firms heed residents and are willing to adopt practices that go beyond regulations. Where firms create relationships with residents, complaints can become valuable assets in discussion for residents and firms may adopt new practices as a result but this can be costly to individual firms.

6. Listening to complainants presents a risk for firms

The story of the Pratt wellsite in Erie, Colorado was not discussed in the chapters; however, I include it here as an example of the potential risks that adopting engagement processes can create for firms because it illustrates why firms may be hesitant to engage citizens and acknowledge complaints as real and valid.

The Pratt Site: A Final Case

On August 28, 2012, Erie Co and Encana Oil and Gas entered into a memorandum of understanding in which Encana agreed to a set of Erie-specific voluntary management practices that went above-and-beyond state regulations. Specific items proposed included notification of all residents located within ½ mile of drilling and posting of plans to community webpages. Throughout the drilling process, Encana communicated with the city of Erie and held public meetings with local representatives, potentially in an effort to avoid delays that faced companies drilling in communities that were attempting to ban hydraulic fracturing. However, these meetings also served as focusing events for local community action against the site.

Other scholarly work has recognized that engagement practices adopted in Erie likely resulted in a greater number of complaints being filed as more citizens were aware of that potential avenue (Shaffer, Zilliox, and Smith 2017). Via a Facebook group and community meetings, residents shared resources and expressed concerns about oil and gas development. From when drilling began in earnest just before in November of 2014 until Encana terminated drilling at the end of December, sixteen residents filed complaints with COGCC, mostly highlighting noise.

Encana's only legal requirement was to continue adopting efforts to mitigate noise complaints to the extent feasible, something it reported doing to the point of \$250,000 before it determined it was unable to continue adopting mitigation measures.² Encana also unexpectedly came in violation of Colorado's solid waste statutes after a citizen reported seeing waste at the site. Because they were drilling in a former landfill while digging the central collection system, the Colorado Department of Public Health and Environment (CDPHE) informed Encana they needed to cease activities until a Waste Management Plan could be established. In both the case of the noise exceedances and waste disposal noncompliance, citizen complaints played a critical role by forcing COGCC and CDPHE to repeatedly investigate reported harms.

Complaining may have improved public environmental outcomes, but complaining about the Pratt site served as a costly event for Encana, a public-relations nightmare for the COGCC, and a galvanizing event for anti-oil and gas development interests in and around Erie.³ Had Encana not actively engaged residents early and often, it is possible they would have received fewer complaints. Encana's efforts at community engagement meant that complaints were actively and openly discussed by local government officials. Individuals as high up as the director of COGCC were forced to make public comments on the events occurring in and around the Pratt site.

Ultimately Encana was forced to cease operations at the site due to the waste violation, but, publicly, the reason given for the initial shutdown of operations was the volume of noise complaints combined with Encana's commitment to "be a good neighbor" in Erie.

² FAQ document.

³ While Encana promised to come back and complete their wells, they ultimately sold to Crestone Natural Resources who as of early 2017 was working on again starting production and drilling at the Pratt and Waste Connection site under a set of newly agreed upon practices.

Where engagement can give purpose to complainants beyond simply driving individual investigations, the potential for risks to firms is real in terms of preventing development, increasing the cost of development, or increasing the potential for public pressure for new regulations. However, by shutting down the Pratt site which by all accounts was abnormally noisy, Encana may have limited the damage to its reputation that might have harmed production at other sites in Colorado. A lesson here is that learning about impacts and addressing those impacts can be costly, but, it can potentially make technologies more socially and environmentally sustainable. It also may carry the benefit of preventing larger focusing events for opposition that may cause even greater economic losses (Kingdon 1984).

5. Coercion is a key element in motivating voluntary practice adoption

Following on the findings of Chapter 2 and 3, complaints were effective because Encana had entered into voluntary agreements with Erie rather than risk the legal disputes of fracking bans as other cities had enacted. Even though these bans were deemed unconstitutional, the threat of such bans— as a method of informal coercion— clearly mattered for Encana’s actions and gave local government some sort of credible threat for addressing impacts. In areas where governments lack coercive abilities and where residents are not involved in planning processes, the prospect of firms willingly adopting beyond de-minimus mitigation strategies appears unlikely. In light of the fact that the State of Colorado has now repeatedly denied bans or any form of local control, government has to increasingly trust that firms will be good actors or that developing a bad reputation in one area may damage the state’s willingness to support operations in other areas.

In cases where complaints are able to influence regulator attitudes and actions, firms may be more likely to heed the warning of citizens. However, localities in Colorado have little to no control over what oil and gas firms do and the impetus to enact such policies rests largely on individual firms willingness to do so. This then raises a significant challenge to the prospect of increased use of complaints as evidence of how to mitigate risks. Because the state is the primarily regulator of oil and gas, firms must act voluntarily in choosing to engage beyond simply addressing violations. Thus, utilizing complaints as a method of addressing resident concerns and discussing development impacts requires trusting firms to decide to use complaints these ways. While coercive pressure is one method by which this can occur taken from Chapter 2, the irony is that ostensibly voluntary practices may still require some significant element of coercion by some non-resident actor.

7. Policy should focus on reducing impacts not complaints

Regardless of the difficulty that would be encountered in actively encouraging complaint listening without some form of coercion, the finding that the adoption of engagement practices may give a larger purpose to the filing complaints by making them a potential evidence source in planning discussions reveals that reductions in complaints should not necessarily be used as evidence of effective governance of oil and gas. Instead, what is desirable is a balance between reducing complaints and encouraging and facilitating complaining in areas where they need to occur. Yet, the very term “citizen complaint” carries a negative connotation that a rephrasal to “citizen reporting”, “citizen concern”, or “citizen alert” may not. Not only did people in my interviews express a dislike of complaining, but corporations and businesses have long struggled

to encourage individuals to express dissatisfaction back to companies, but face a problem of people not wanting to be labeled as “complainers” (Best and Andreasen 1977). This underreporting of perceived wrongs is not unique to business—the common statement American consumers and citizens love to complain and that the US is a litigious society does not have a basis in evidence (Galanter 1983; Haltom and McCann 2009). Americans, especially non-white, low-income, and uneducated Americans are more likely to let perceived harms go unaddressed (Engel 2016). My study of complainants was homogenous in its racial makeup, only included individuals with steady home addresses, and failed to identify factors other than weariness or perceived inefficacy which reduced complaint behavior. Access remains a critical question, and as the US continues to diversify and extractive technologies enter new communities, developing methods of increasing access to complaint forums will be necessary to ensure that the benefits of complaining are only felt by some communities and not others.

8. Local government can play a key role in addressing resident concerns even when the state is the main regulator

Given the diversity of gas development, effectively including all forms of engagement and community action within a single quantitative analysis would be a major empirical challenge, yet, complaints may unexpectedly increase in areas where we encourage policies which we hope may encourage long run improvements in policies. The central role that local governments play in Chapter 3 and in the stories of places like Battlement Mesa and Erie should stand out to any reader, yet these local government policies and land use provisions are notably missing from Chapter 2’s analysis of potential coercive mechanisms. While I controlled for

density of development and special COGCC rules, municipalities and counties differ greatly, and any fixed effects or random effect at these levels was not valuable for improving model fit. However, in analyzing complaints and voluntary practice on the whole, I have come to the conclusion that local government involvement— something I did not have data to model in Chapter 1 and 2, is a critical factor in the rate at which complaints occur and the usefulness of these complaints for policymaking. Local governments can also pressure firms to adopt voluntary practices by unspecifically threatening future development or by reviewing land use statutes.

Another reason local action is highlighted by these chapters is there is very little evidence here of firms applying lessons from one group of complaints to their operations in other parts of the State. While practices such as constructing sound barriers have become widespread partially in an effort to reduce complaints, there is little evidence also that lessons from the Pratt site or other complaints studied here influenced firm practices elsewhere. For individual firms, dismissal of complaint clusters as anomalies (as Encana initially did at the Pratt site), classification of complaint behavior as a nuisance (Warwick and Ortolano 2007), describing complaints as resulting from perceived injustice about extractive rights (Brasier et al. 2013), or continuing to dismiss complaints as driven by a lack of knowledge of oil and gas development impacts may preserve development for the time being, but, these arguments also hinder the ability of firms to learn from complaints (Theodori 2009).

9. Mixed-Methodology research programs provide a useful path forward for evaluating policies, though they raise contradictions highlighting methodological shortcomings.

These findings highlight the importance of mixed-methodology research for conducting analysis of policies and policy theory. Though there is increased excitement in the field of public policy and management about large sources of administrative data and the potential to use data analytic methods to improve research designs, such practices should not replace traditional methods of research. While the data analytic methods of supervised machine learning, natural language processing, and text similarity comparisons applied in Chapter 1 and Chapter 2 helped me to answer existing research questions in new ways, the interviews of Chapter 3 and 4 were profoundly helpful in helping me to modify models and interpret findings in light of the larger context of policy and management. By combining semi-structured interviews and data analytic techniques, I believe I have created a deep research project that builds in new techniques alongside classic research techniques, and I hope the projects here demonstrate the potential for building multi-method projects despite the contradictions such projects inevitably create.

THE NECESSITY OF PUBLIC ACTORS IN PROMPTING ENGAGEMENT

In designing policy and management structures, best practices stipulate that evaluation should be included and considered when designing policies (Rossi, Lipsey, and Freeman 2003; Vining and Weimer 2010). Complaints, though not necessarily effective at monitoring, can help us to improve policy even if they are not currently used this way in a widespread manner. This is not to say complaint forums should reduce upstream methods of engagement such as integrating

residents into planning discussions (Wilsdon and Willis 2004), but instead, given the fact that complaints are indicative of environmental cues about perceived threats, complaints can and should be encouraged as a method of facilitating feedback on both structural and non-structural policies and procedures. They can serve as a potential mechanism of policy co-production with citizens. Yet, governments, both locally and at the state level need to play a central role in listening to complainants. While the choice of firms to engage residents may be voluntary, the presence of government actors changes the consequences of not engaging and not listening to residents. Even where oil and gas appears a purely private issue, there is a tremendous role for the public sector and even individual public managers in addressing its risk.

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APPENDIX CHAPTER 1:

Temporal random effect estimates:

Complaints are more likely for cases that have oldest drilling dates or occur during the most recent oil boom, and less likely in the period from 2000 to 2009. This likely has to do with the recent changes to policies which began in 2009.

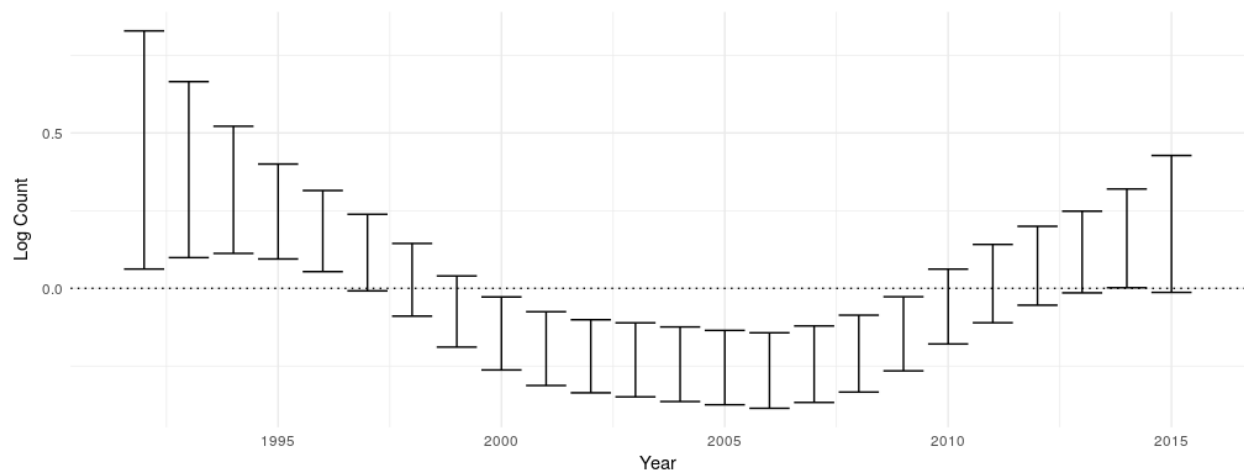


Figure A1.1: Temporal random effect 95% credible intervals

County level random effect estimates:

County information provided little improvement in terms of model fit.



Figure A1.2: County random effect 95%credible intervals.

Model Fixed effect estimates:

Table A1.1: Fixed effect estimates

Model	Variable	mean	sd	0.025quant	0.5quant	0.975quant
Engagement	Struc: Gas or Diesel Motors	-0.045	0.037	-0.123	-0.044	0.024
Engagement	Struc: Electric Generators	-0.004	0.036	-0.078	-0.003	0.063
Engagement	Struc: Drilling Pits	-0.087	0.034	-0.156	-0.087	-0.022
Engagement	Struc: Gas Flare	0.023	0.025	-0.030	0.025	0.067
Engagement	Struc: PumpJacks	0.020	0.027	-0.036	0.021	0.071
Engagement	Struc: Water Pipeline	0.147	0.023	0.101	0.147	0.193
Engagement	Phys: Distance from Address	0.017	0.021	-0.025	0.018	0.056
Engagement	Drill: Water Volume	0.006	0.016	-0.026	0.007	0.037
Engagement	Drill: Oil Volume Produced	0.006	0.016	-0.027	0.006	0.036
Engagement	Drill: Gas Volume Produced	0.031	0.018	-0.005	0.031	0.065
Engagement	Phys: Tract Under 200% Poverty	-0.008	0.036	-0.078	-0.008	0.062
Engagement	Phys: Population Density	0.010	0.023	-0.036	0.011	0.052
Engagement	Drill: Hydraulic Fracturing at Site	-0.242	0.064	-0.368	-0.242	-0.116
Engagement	Drill: Horizontal Drilling	0.321	0.070	0.184	0.321	0.458
Engagement	Drill: Production at Location	0.703	0.052	0.601	0.703	0.805
Engagement	Phys: Sensitive or Restrictive Wildlife Area	0.094	0.063	-0.030	0.094	0.218
Engagement	Phys: Distance to Water Well	-0.096	0.001	-0.099	-0.096	-0.094
Engagement	Man: Form 2A on File	-0.319	0.113	-0.542	-0.319	-0.100
Engagement	Phys: Distance to Residential Building	-0.012	0.064	-0.137	-0.012	0.113
Engagement	Phys: Surface Fee	-0.113	0.054	-0.218	-0.113	-0.008
Engagement	Phys: Same Surface and Well Owner	0.114	0.114	-0.105	0.112	0.343

Engagement	Man: Count of BMPs	-0.009	0.061	-0.134	-0.007	0.104
Engagement	Engagement	-0.135	0.209	-0.552	-0.133	0.271
Engagement	VMP count: Engagement	0.082	0.070	-0.053	0.081	0.223
Deliberation	Struc: Gas or Diesel Motors	-0.043	0.036	-0.119	-0.042	0.024
Deliberation	Struc: Electric Generators	-0.004	0.035	-0.077	-0.003	0.059
Deliberation	Struc: Drilling Pits	-0.083	0.034	-0.151	-0.082	-0.017
Deliberation	Struc: Gas Flare	0.026	0.024	-0.026	0.028	0.069
Deliberation	Struc: PumpJacks	0.033	0.027	-0.023	0.034	0.084
Deliberation	Struc: Water Pipeline	0.141	0.024	0.094	0.142	0.188
Deliberation	Phys: Distance from Address	0.018	0.021	-0.024	0.019	0.057
Deliberation	Drill: Water Volume	0.004	0.016	-0.029	0.005	0.035
Deliberation	Drill: Oil Volume Produced	0.006	0.016	-0.027	0.007	0.037
Deliberation	Drill: Gas Volume Produced	0.031	0.018	-0.005	0.031	0.065
Deliberation	Phys: Tract Under 200% Poverty	-0.005	0.036	-0.075	-0.005	0.065
Deliberation	Phys: Population Density	0.016	0.022	-0.030	0.017	0.057
Deliberation	Drill: Hydraulic Fracturing at Site	-0.243	0.064	-0.368	-0.243	-0.118
Deliberation	Drill: Horizontal Drilling	0.313	0.070	0.176	0.313	0.450
Deliberation	Drill: Production at Location	0.704	0.053	0.601	0.704	0.808
Deliberation	Phys: Sensitive or Restrictive Wildlife Area	0.097	0.063	-0.027	0.097	0.221
Deliberation	Phys: Distance to Water Well	-0.096	0.001	-0.099	-0.096	-0.093
Deliberation	Man: Form 2A on File	-0.383	0.112	-0.606	-0.382	-0.164
Deliberation	Phys: Distance to Residential Building	-0.014	0.063	-0.139	-0.013	0.108
Deliberation	Phys: Surface Fee	-0.119	0.054	-0.224	-0.119	-0.013
Deliberation	Phys: Same Surface and Well Owner	0.108	0.114	-0.111	0.106	0.338
Deliberation	Man: Count of BMPs	0.169	0.032	0.104	0.169	0.231

Deliberation	Deliberation	-0.293	0.287	-0.867	-0.289	0.260
Deliberation	VMP Count:Deliberation	-0.163	0.066	-0.296	-0.162	-0.039
Delib+Engage	Struc: Gas or Diesel Motors	-0.043	0.036	-0.118	-0.041	0.024
Delib+Engage	Struc: Electric Generators	-0.003	0.035	-0.076	-0.002	0.060
Delib+Engage	Struc: Drilling Pits	-0.090	0.034	-0.157	-0.089	-0.025
Delib+Engage	Struc: Gas Flare	0.025	0.025	-0.028	0.026	0.068
Delib+Engage	Struc: PumpJacks	0.031	0.027	-0.025	0.032	0.082
Delib+Engage	Struc: Water Pipeline	0.139	0.024	0.092	0.139	0.185
Delib+Engage	Phys: Distance from Address	0.018	0.021	-0.024	0.019	0.057
Delib+Engage	Drill: Water Volume	0.004	0.016	-0.029	0.005	0.035
Delib+Engage	Drill: Oil Volume Produced	0.006	0.016	-0.027	0.007	0.037
Delib+Engage	Drill: Gas Volume Produced	0.031	0.018	-0.005	0.031	0.065
Delib+Engage	Phys: Tract Under 200% Poverty	-0.003	0.036	-0.073	-0.003	0.066
Delib+Engage	Phys: Population Density	0.016	0.022	-0.030	0.017	0.057
Delib+Engage	Drill: Hydraulic Fracturing at Site	-0.241	0.064	-0.366	-0.241	-0.115
Delib+Engage	Drill: Horizontal Drilling	0.316	0.070	0.179	0.316	0.453
Delib+Engage	Drill: Production at Location	0.702	0.053	0.599	0.702	0.806
Delib+Engage	Phys: Sensitive or Restrictive Wildlife Area	0.097	0.063	-0.028	0.097	0.221
Delib+Engage	Phys: Distance to Water Well	-0.096	0.001	-0.099	-0.096	-0.093
Delib+Engage	Man: Form 2A on File	-0.368	0.110	-0.586	-0.367	-0.153
Delib+Engage	Phys: Distance to Residential Building	-0.015	0.063	-0.140	-0.014	0.108
Delib+Engage	Phys: Surface Fee	-0.120	0.054	-0.225	-0.120	-0.015
Delib+Engage	Phys: Same Surface and Well Owner	0.105	0.114	-0.114	0.103	0.335
Delib+Engage	Man: Count of BMPs	0.160	0.031	0.097	0.160	0.220

Delib+Engage	Man: Both Engagement and Deliberation	-0.297	0.298	-0.895	-0.293	0.277
Delib+Engage	Man: Both Engagement and Deliberation:VMP Interaction	-0.160	0.067	-0.298	-0.158	-0.033

APPENDIX: CHAPTER 2

Spatial Random Effect Estimates

Viewing the random effects for the basic model, I find that companies operating in counties in Weld, Rio Blanco, and Jackson county see consistently increased log odds of new VMP language, while most other major oil producing counties are associated with generally increased odds (Figure A2.1). Again, however, these trends are generally consistent across the models. Weld County has been an area of much controversy in terms of oil and gas development recently, while Rio Blanco county is rural and has a long history of oil production.

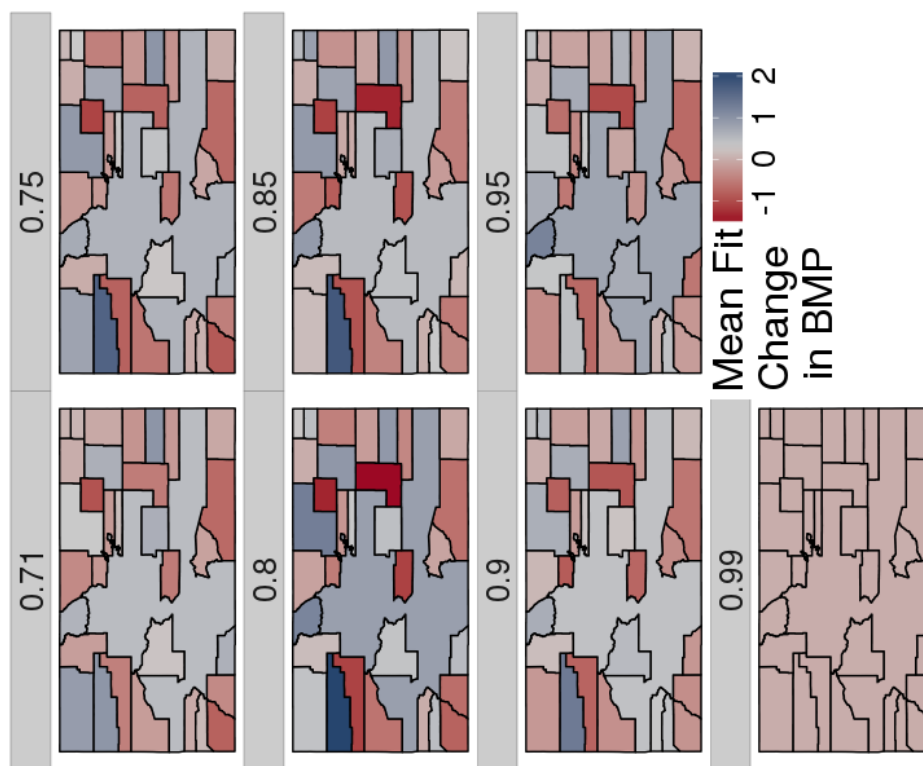


Figure A2.1: Map of random effect predictions in log odds for counties in Colorado.

Temporal Trends

Viewing the temporal time trend (Figure A2.2), I observe that towards the beginning of the sample period, text change has a higher odds of occurring. This is likely a byproduct of the methods used. As there are fewer VMPS with which to compare to early on, early observation have more potential for change. Thus, controlling for temporal trends is critical to analyzing the dependent variable as otherwise early wells will be improperly associated with increased textual change in a manner that is not reflective of actual learning. However, it is critical to note as well that the increase in change odds at the beginning of 2014 may be due to an administrative rulemaking at that time which restructured the permitting process, but also increased public awareness of potential avenues of addressing concerns.¹

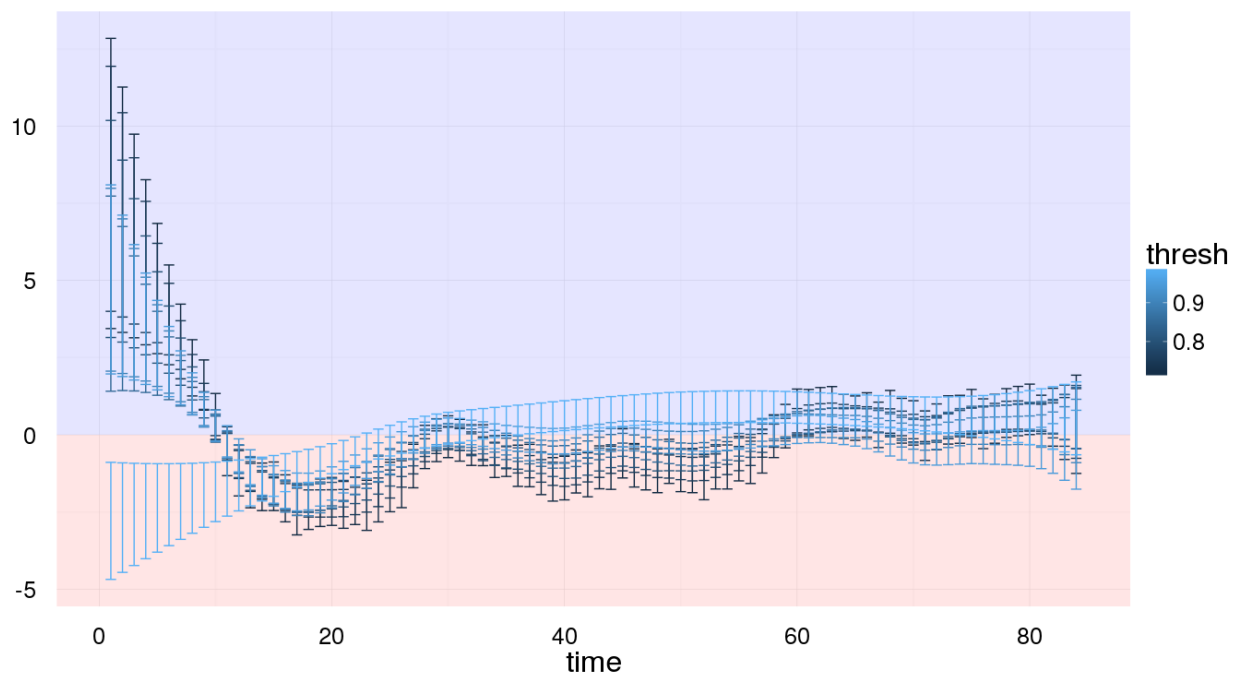


Figure A2.2: Temporal trend in log odds of VMP change plotted by month.

¹ Based on interviews with local residents, October 2016.

Company Random Effect Credible Intervals

Looking at company random effects and comparing credible intervals across the models, I find that as the threshold increases the standard errors for almost all companies possessing credible intervals significantly different from 0 change (Figure A2.3). Essentially, as the threshold for VMP change moves towards one, the likelihoods for companies converge. This however does not occur for Carrizo, Noble, WPX, Great Western, PDC or Nighthawk, likely due to the fact that these companies have a large number of locations compared to other companies. Across all models here, the perfect fits for the threshold of 0.99 however are a result of a lack of observations--evidence that a threshold of 1 for change in VMP is too restrictive to provide a reasonable result for modeling.

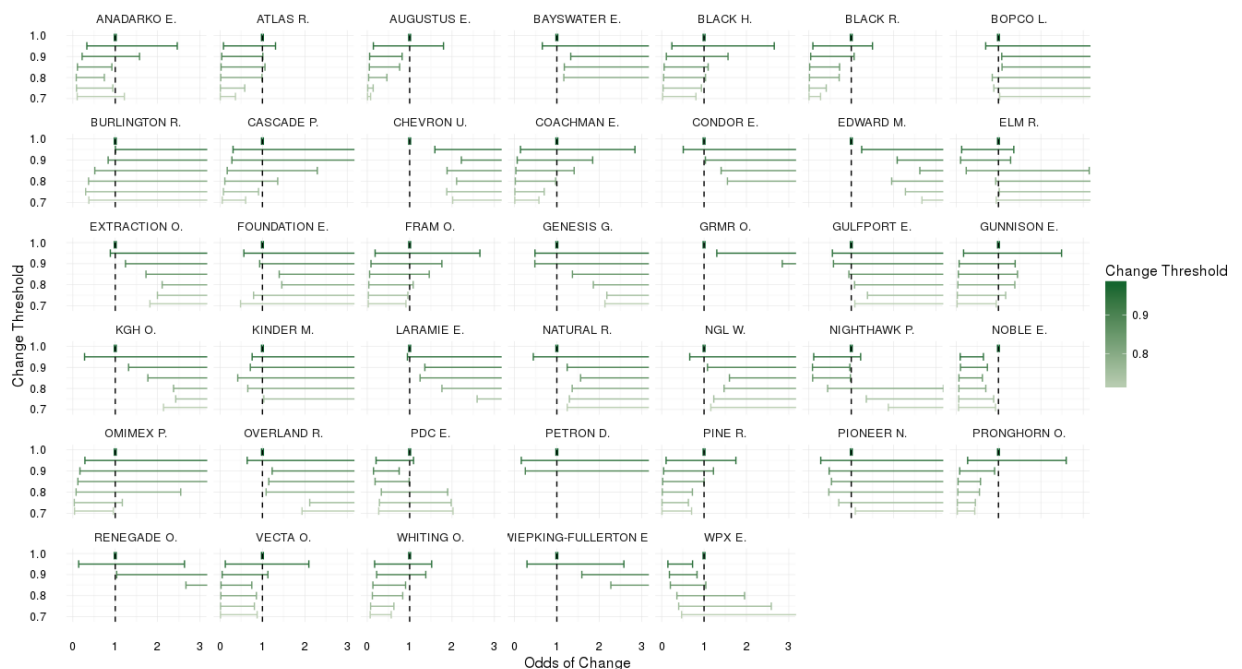


Figure A2.3: 95% Random effect credible intervals for individual companies where at least one interval does not cross 1.

Table A2.1: Full Fixed Effect Estimates showing Sensitivity to Assumption about Textual Change

Variables	Threshold	mean	sd	0.025 quantile	0.5 quantile	0.975 quantile
BMP Norms Deviance	71%	0.007	0.036	-0.063	0.008	0.077
	75%	0.014	0.036	-0.056	0.015	0.084
	80%	0.02	0.037	-0.054	0.02	0.093
	85%	0.065	0.038	-0.011	0.065	0.139
	90%	0.103	0.041	0.021	0.103	0.183
	95%	0.074	0.053	-0.032	0.075	0.176
	99%	0.154	0.092	-0.037	0.157	0.324
COGA member	71%	-0.536	0.385	-1.293	-0.536	0.22
	75%	-0.56	0.366	-1.283	-0.56	0.159
	80%	-0.585	0.328	-1.231	-0.584	0.06
	85%	-0.431	0.309	-1.04	-0.431	0.176
	90%	-0.449	0.273	-0.987	-0.448	0.087
	95%	-0.357	0.251	-0.852	-0.357	0.138
	99%	0.09	0.257	-0.412	0.09	0.595
Company Founding Year	71%	-0.38	0.296	-0.962	-0.38	0.205
	75%	-0.443	0.281	-0.997	-0.443	0.111
	80%	-0.457	0.249	-0.947	-0.457	0.032
	85%	-0.498	0.233	-0.96	-0.498	-0.04
	90%	-0.395	0.202	-0.796	-0.395	0.002
	95%	-0.274	0.179	-0.63	-0.273	0.076
	99%	0.155	0.212	-0.247	0.15	0.585
Complaints 3 Months	71%	0.008	0.047	-0.084	0.008	0.101
	75%	0.025	0.047	-0.067	0.025	0.118
	80%	0.026	0.049	-0.07	0.026	0.121
	85%	0.09	0.052	-0.012	0.09	0.192
	90%	0.043	0.061	-0.077	0.043	0.162
	95%	-0.014	0.082	-0.175	-0.014	0.146
	99%	0.022	0.165	-0.309	0.025	0.342
Count of Condition Characters	71%	0.04	0.044	-0.045	0.039	0.127
	75%	-0.006	0.042	-0.088	-0.007	0.076

	80%	0.036	0.041	-0.043	0.036	0.117
	85%	0.068	0.041	-0.012	0.068	0.148
	90%	0.092	0.041	0.01	0.092	0.173
	95%	0.077	0.049	-0.022	0.077	0.17
	99%	0.157	0.059	0.033	0.16	0.266
Distance to Nearest Residence	71%	-0.105	0.069	-0.241	-0.105	0.031
	75%	-0.153	0.07	-0.291	-0.153	-0.015
	80%	-0.18	0.074	-0.324	-0.18	-0.036
	85%	-0.139	0.079	-0.293	-0.139	0.017
	90%	-0.143	0.09	-0.319	-0.144	0.033
	95%	-0.237	0.104	-0.442	-0.237	-0.032
	99%	0.108	0.148	-0.176	0.107	0.404
Employees	71%	0.375	0.212	-0.038	0.373	0.796
	75%	0.36	0.202	-0.032	0.358	0.762
	80%	0.337	0.18	-0.011	0.336	0.696
	85%	0.362	0.17	0.035	0.36	0.703
	90%	0.261	0.149	-0.025	0.259	0.56
	95%	0.229	0.135	-0.031	0.227	0.499
	99%	0.137	0.128	-0.115	0.137	0.388
Intercept	71%	0.399	0.425	-0.444	0.401	1.23
	75%	0.217	0.402	-0.579	0.218	1.002
	80%	-0.24	0.365	-0.963	-0.238	0.473
	85%	-0.832	0.348	-1.521	-0.831	-0.153
	90%	-1.334	0.32	-1.966	-1.333	-0.709
	95%	-2.097	0.344	-2.776	-2.096	-1.424
	99%	-5.275	0.404	-6.089	-5.267	-4.502
NAICS is 211111	71%	-0.465	0.42	-1.294	-0.464	0.359
	75%	-0.589	0.4	-1.379	-0.588	0.196
	80%	-0.659	0.357	-1.365	-0.658	0.043
	85%	-0.776	0.338	-1.445	-0.774	-0.115
	90%	-0.762	0.298	-1.353	-0.761	-0.181
	95%	-0.846	0.274	-1.387	-0.845	-0.309
	99%	-0.755	0.291	-1.333	-0.752	-0.191
NOAVs 3 months	71%	-0.012	0.037	-0.088	-0.011	0.058
	75%	-0.012	0.037	-0.088	-0.011	0.058
	80%	-0.045	0.043	-0.134	-0.044	0.035
	85%	-0.035	0.045	-0.129	-0.033	0.048
	90%	-0.059	0.052	-0.169	-0.057	0.035
	95%	-0.075	0.077	-0.244	-0.069	0.06

	99%	-0.308	0.302	-0.98	-0.277	0.203
Oil and Gas	71%	0.015	0.043	-0.068	0.015	0.099
	75%	-0.008	0.043	-0.093	-0.008	0.077
	80%	-0.046	0.046	-0.135	-0.046	0.044
	85%	0.008	0.049	-0.088	0.008	0.103
	90%	-0.01	0.055	-0.117	-0.01	0.098
	95%	-0.01	0.072	-0.151	-0.01	0.13
	99%	-0.017	0.142	-0.298	-0.016	0.258
Passed Inspection	71%	0.403	0.074	0.257	0.403	0.549
	75%	0.37	0.074	0.225	0.369	0.515
	80%	0.308	0.075	0.162	0.308	0.456
	85%	0.285	0.077	0.134	0.284	0.437
	90%	0.17	0.081	0.012	0.169	0.33
	95%	0.079	0.096	-0.109	0.078	0.269
	99%	-0.498	0.158	-0.81	-0.497	-0.19
Previous Well at Site	71%	0.006	0.036	-0.065	0.006	0.076
	75%	0.024	0.035	-0.046	0.024	0.093
	80%	0.057	0.035	-0.013	0.057	0.126
	85%	0.045	0.036	-0.027	0.045	0.115
	90%	0.04	0.042	-0.044	0.04	0.12
	95%	0.116	0.047	0.021	0.117	0.206
	99%	0.166	0.09	-0.027	0.172	0.328
Similarity to Conditions	71%	-0.188	0.031	-0.25	-0.188	-0.126
	75%	-0.195	0.031	-0.257	-0.195	-0.134
	80%	-0.203	0.033	-0.267	-0.203	-0.139
	85%	-0.175	0.035	-0.244	-0.175	-0.106
	90%	-0.084	0.041	-0.164	-0.084	-0.004
	95%	-0.094	0.055	-0.2	-0.094	0.015
	99%	-0.008	0.121	-0.234	-0.012	0.241
Spills 3 Months	71%	-0.041	0.053	-0.145	-0.041	0.062
	75%	-0.01	0.052	-0.113	-0.01	0.093
	80%	-0.018	0.054	-0.124	-0.018	0.088
	85%	-0.047	0.057	-0.158	-0.047	0.065
	90%	0.042	0.064	-0.083	0.042	0.168
	95%	0.027	0.084	-0.138	0.027	0.192
	99%	-0.003	0.157	-0.316	-0.001	0.302
Uncertainty (other firms BMP)	71%	0.572	0.05	0.475	0.571	0.67
	75%	0.389	0.046	0.301	0.389	0.48
	80%	0.213	0.046	0.123	0.213	0.303

	85%	0.065	0.049	-0.033	0.065	0.161
	90%	-0.039	0.06	-0.16	-0.039	0.076
	95%	-0.114	0.086	-0.289	-0.112	0.05
	99%	-0.325	0.169	-0.677	-0.318	-0.013
Water Tanks	71%	0.091	0.081	-0.067	0.091	0.249
	75%	0.199	0.08	0.042	0.199	0.357
	80%	0.22	0.083	0.057	0.22	0.383
	85%	0.336	0.09	0.16	0.335	0.512
	90%	0.496	0.104	0.292	0.496	0.702
	95%	0.428	0.137	0.161	0.428	0.699
	99%	0.202	0.273	-0.323	0.198	0.748
Wattenberg	71%	0.442	0.119	0.209	0.442	0.676
	75%	0.376	0.12	0.141	0.376	0.612
	80%	0.368	0.126	0.121	0.368	0.616
	85%	0.39	0.136	0.124	0.39	0.657
	90%	0.3	0.157	-0.007	0.299	0.608
	95%	0.292	0.213	-0.123	0.291	0.713
	99%	-0.099	0.417	-0.933	-0.094	0.705
Wildcat	71%	0.129	0.123	-0.113	0.129	0.371
	75%	0.107	0.124	-0.137	0.107	0.351
	80%	0.167	0.128	-0.085	0.167	0.417
	85%	0.248	0.131	-0.009	0.248	0.505
	90%	-0.074	0.143	-0.356	-0.074	0.205
	95%	-0.255	0.186	-0.622	-0.254	0.106
	99%	0.542	0.288	-0.028	0.543	1.104
Wildlife Area	71%	0.167	0.089	-0.007	0.167	0.341
	75%	0.253	0.09	0.075	0.253	0.43
	80%	0.401	0.096	0.213	0.401	0.589
	85%	0.401	0.102	0.201	0.401	0.6
	90%	0.587	0.113	0.365	0.587	0.809
	95%	0.62	0.149	0.326	0.62	0.912
	99%	0.323	0.252	-0.17	0.322	0.817

APPENDIX CHAPTER 3:

CODEBOOK

Table A3.1: PADM Codebook

Protective Action Decision Model (PADM)		
Environmental and Social Context		
	Receiver Characteristics	
	Identity	Personal identity of individual including pre held thoughts and beliefs.
	Place History	History and context for place of complaint and how long that person has lived there
	Locational Attributes	How a person conceives of their neighborhood, place
	Place Change	Statements about transitions of place
	Rural, Suburban	Statements about either rurality or suburbanness
	Receive Payments for Oil and Gas	Statements about payments, royalties for oil and gas.
	Stakeholder Characteristics	Characteristics of individuals and groups involved in responding to hazard.
	Stakeholder Identity	Identification information of the stakeholder the individual talked to
	Network Connections	Communication pathways or statements of communication with other stakeholders.
	Expert	Scientist, landman, or other externally hired/consulted actor with expertise.
	Neighbor	Other citizens
	Firm	Oil and gas companies and employees
	State Government	Managers employed by the state of Colorado
	Local Government	Managers employed by local government.
	Watchdog	Newspapers, reporters, journalists etc.
	Organization	Nonprofit or for profit advocacy or community groups and their members working in official or advisory capacity ie: In Battlement Mesa, BCC initiated connections are via organization NOT neighbors.
Predecisional Processes		
	Exposure	Receipt of information/message/warning
	Warning	
	Social Cue	Observations of others behavior, group dynamics
	Environmental Cue to Sound, Smell, Feel (Motion), Sight	"Sights, smells, or sounds that signal the onset of a threat whereas social cues arise from observations of others' behavior." Lindell and Perry 2011

	Comprehension	Ability to understand message, meaning of message
	Attention	Do they notice the warning
	Core Perceptions	
	Perceptions of Stakeholders	How individuals perceive of stakeholders involved in the management of oil and gas risks
	State Agency, Neighbors, Local Government	
	Perceptions of Firms	How individuals perceive of firms in their attitudes and actions.
	Sentiment Positive	Positive perspectives on stakeholder
	Sentiment Negative	Negative perspectives on stakeholder
	Collusion/Capture (for state)	Ideas that state is on side of producers not citizens
	Perceptions of Threat	
	Psychological Factors	
	Dread	Statements about future risk
	Probability	Statements about likelihood of impact
	Severity	Statements about magnitude of impact
	Unknown Risk	Statements about lack of knowledge about a risk
	Intrusiveness	Frequency of thought and discussion about a hazard and responses to it.
	Proximity	Statements about how close a risk is.
	Nature of oil and gas development	Attitudes, actions, and opinions on the broad nature of oil and gas development in all its forms
	Perceptions of Alternative Actions	Receiver perceptions of what actions could be taken in response to a threat.
	Efficacy	Statements about outcomes achieved or what was accomplished via an action
	Barriers to Effective Investigation	Elements that prevent an action from being effective
	Access	Variables affecting ability of actor to enter into alternative action
	Decision Processes	
	Protective Action Search	
	Information Retrieval	Retrieval of information about actions that can be taken either from memory or another source.
	Method	How was information accessed
	Source	What was the source of the information
	Risk Assessment	Assessment of expected impacts of a threat that forms a rationale for actions.
	To community, to health, to property	Code for where individual assess the threat to.
	Hazard Identification	Recognition of a hazard as real and present or the realization that a situation is not normal.
	Action Assessment	Determinations about what potential protective actions to take

Action Implementation	The act of complaining/protecting/meeting or acting to mitigate risks/externalities of oil and gas

RECRUITMENT LETTERS



EVANS SCHOOL OF PUBLIC POLICY & GOVERNANCE
UNIVERSITY of WASHINGTON

Dear Kenneth Williams,

I am a PhD Candidate at the University of Washington studying Public Policy and Management, and I am interested in talking with you about your experiences with oil and gas development in your area. I selected you as a potential participant because you filed a complaint with the State of Colorado concerning a local oil and gas site. The state recorded your address information which is how I am able to contact you.

The goal of my research is to understand how management structures can be adapted to address risks of oil and gas development, and to understand the role residents like yourself may play within that process. Specifically, I'm interested in hearing about your attitudes concerning natural gas and oil development and about any interactions you may have had with corporations and or government agencies. I'm hoping you can also help me understand the role citizen complainants may play in shaping the governance of oil and gas development.

If you would be willing to talk with me, I would appreciate you would respond via a webform at:

<https://staff.washington.edu/rjscott5/oil-and-gas-interviews>

Alternatively, you can email me at rjscott5@uw.edu, or reach me via phone at (253) 569-7236. We can then set up a time to talk. I plan to be in Colorado in mid October, and if possible, I would love to set up a time to come talk to you personally. If that does not work, we could also arrange a phone call or talk via something such as Skype.

I do not expect our conversation will take more than an hour, and I will very much appreciate your participation. Of course, any information you provide will be confidential within the limits of the law, and I will work to help ensure your privacy is protected. The consent agreement for our discussion is also available at <https://staff.washington.edu/rjscott5/oil-and-gas-interviews>, and it further describes your rights should you agree to talk with me.

Thank you again for your time. Please let me know if you have any questions, concerns, and/or comments for me. I look forward to hearing from you soon.

Sincerely,
Ryan

Ryan P Scott, MS
PhD Candidate, Evans UW
rjscott5@uw.edu
253.569.7236

Daniel J. Evans School of Public Policy & Governance Parrington Hall 109 Box 353055 Seattle, WA 98195-3055
main 206.543.4900 fax 206.543.1096 evans.uw.edu



Dear Stephen Tonkin,

I'm writing in follow-up to a previous letter I sent you asking if you'd be willing to participate in my research project. Hopefully this letter reached you. I am a PhD Candidate at the University of Washington studying Public Policy and Management and I am interested in talking with you about your experiences with oil and gas development in your area.

I selected you as a potential participant because you filed a complaint with the State of Colorado concerning a local oil and gas site that stood out to me due to the characteristics of the oil and gas site. Though our discussion, you can help me understand the role citizen complainants may play in shaping the governance of oil and gas development. This will play a critical role in my larger goal of learning how future management structures can be adapted to manage social and environmental risks of oil and gas development.

Participating in the study simply means having a conversation with me about your experiences—I have a brief set of questions to run through, and I do not expect our conversation will take more than an hour. Of course, any information you provide will be confidential within the limits of the law, and I will work to help ensure your privacy is protected. The consent agreement for our discussion and other details are available at <https://staff.washington.edu/ryscott5/oil-and-gas-interviews>.

I'll be in Colorado in mid October— between the 17th and 24th, and would be love to sit down with you and hear your perspective. If you would prefer, we could talk via phone or via an internet connection. Either way, we can schedule something for a time and location that is convenient for you.

I would appreciate if you would respond via email at ryscott5@uw.edu, via phone at 253.569.7236, or via webform at <https://staff.washington.edu/ryscott5/oil-and-gas-interviews>.

Thank you again for your time. I look forward to hearing from you soon.

Sincerely,

Ryan
Ryan P Scott, MS
PhD Candidate, Evans UW
ryscott5@uw.edu
253.569.7236

Dear Karen Truelove,

Daniel J. Evans School of Public Policy & Governance Parrington Hall 109 Box 353055 Seattle, WA 98195-3055
main 206.543.4900 fax 206.543.1096 evans.uw.edu

SCRIPT

COMPLAINANT SEMI-STRUCTURED INTERVIEW SCRIPT

Hello, my name is Ryan Scott, thank you very much for taking time out of your busy schedule to talk with me.

I'll begin by introducing myself, and my purpose. Then I invite you to ask any questions or express any concerns you might have so we can address those from the beginning. Does that sound alright?

I'm a Ph. D. Candidate at the University of Washington, as you may know, I'm interested in understanding what your experience has been with natural gas development. I'm hoping today we can have a casual conversation about what your experience has been with gas development and any factors that have been critical in shaping either your attitudes or experiences. I've brought along a series of questions to ask you, but I'm going to approach the questions in as conversational a manner as possible. How does that sound?

[consent]

Wonderful. If it's okay with you, it would be helpful if I could record our conversation here today. The benefit of me recording it is I will go through and produce an exact transcript of our conversation today rather than simply relying on my own notes. It's a way of making sure I can do my best job as a researcher.

[BACKGROUND]

To begin with, I'd love to hear about how long you've lived here in this part of Colorado and what is it that attracted you here?

[OIL AND GAS PERSPECTIVE]

Can you tell me about what oil and gas development in your neighborhood.

Do you happen to know how close the nearest well sites are to your residence?

What are the benefits of these well sites?

What are the things that bother you about these well sites?

Do you have any perspectives on oil and gas that you have now that are different from perspectives you used to have?

PROBE: Are there any events, instances, you can think of that have been pivotal in shaping your attitudes about oil and gas?

,

[FIRM BEHAVIOR AND PRACTICES]

One thing I'm interested in how firm behavior affects local citizens. Could you tell me about any contact you've had with firms conducting oil and gas operations.

Has firm contact shaped your perspective on oil and gas development in any ways?

PROBE What aspects of firm contact shaped your perspective?

Did you learn anything as a result of that contact?

PROBE: If not, why not? If yes, how?

What more could firms do to meet your needs as a local citizen?

[COMPLAINT FORUM]

I'd like to ask you if I could about interactions with the state oil and gas agency. Have you contacted COGCC before, either as a part of the complaint process or otherwise, and if so what was that process like?

Can you tell me about the outcome of that contact with COGCC?

How has that contact changed your perspective on oil and gas in your region, if at all?

How has that contact changed your perspective on the oil and gas agency, if at all?

How has that contact changed your perspective on oil and gas companies, if at all?

Did that contact help lead to changes in how oil and gas were managed near you?

PROBE: If not, why not? If yes, how?

Did you learn anything as a result of that contact?

PROBE: If not, why not? If yes, how?

[CONCLUSION]

Are there any other things you think I should know about oil and gas development or your experience with it?

Thank you very much for your time. My next task will be to transcribe our discussion. Please feel free to contact me with any questions or concerns you may have moving forward.

SENTIMENT ANALYSIS

Using an automated sentiment of perceived efficacy of complaining¹, Figure 9 presents individual complainants counts of secondary codes for barriers to efficacy organized by the overall sentiment about efficacy.

¹ Based on a database of “positive” and “negative” words, sentiment was coded as the sum of positive (1) and negative words (-1) and mean centered at 0 (Ding, Liu, and Yu 2008; Silge and Robinson 2016).

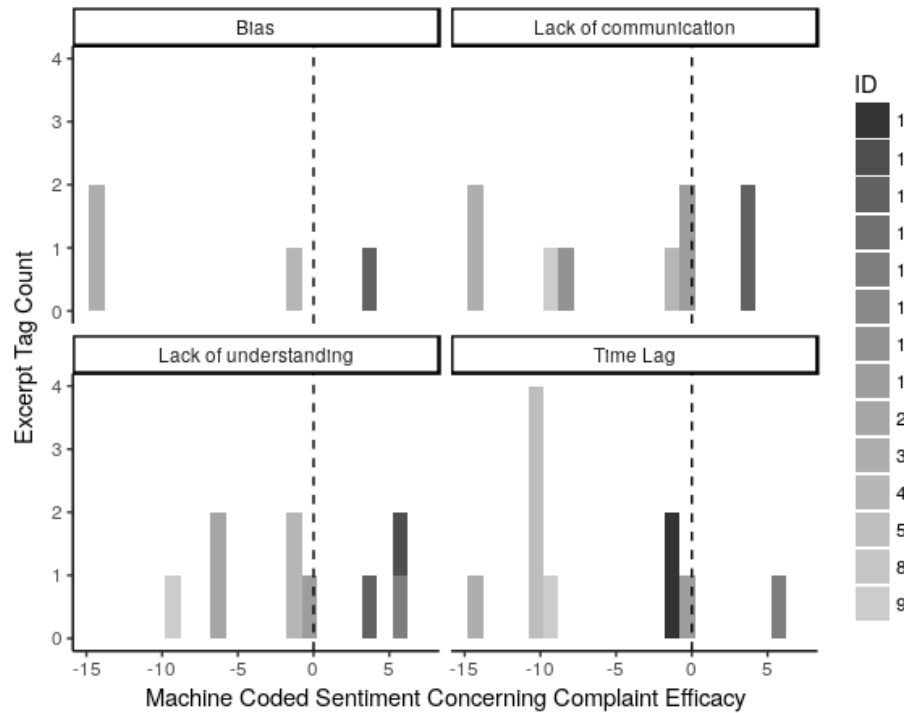


Figure A3.2: Automated sentiment codes for excerpts about the efficacy of complaining and counts of specific rationales for why complaints were ineffective.

Notably sentiments concerning complaint efficacy across the dataset trended towards negative, with 1.65 negative words occurring for every positive word.

INTER-RATER CODING

Text similarity between common codings based on the corpus vector space for the trainee and expert coder.² This method was used as a first comparison to look for areas of consistency between coders on a single unstructured interview transcripts. The secondary coder for this analysis was a masters level researcher who I trained to apply the PADM codes. The vector space model uses word embeddings to fit text into a vector space. For each code, I selected text coded

²Selivanov, Dmitriy. 2017. "text2vec." Accessed June 3. <http://text2vec.org/index.html>.

by the secondary coder for that context and compared it to the 75th percentile of all other code comparisons, based on the cosine similarity between the two sets of word vectors. Note: this is not a bag of words approach but takes the contextual arrangement of words into account as a model of latent meaning. Specifying alternative actions, dread risks, and information sources/retrieval were the areas of most disagreement in the similarity of comparable excerpts from a single interview.

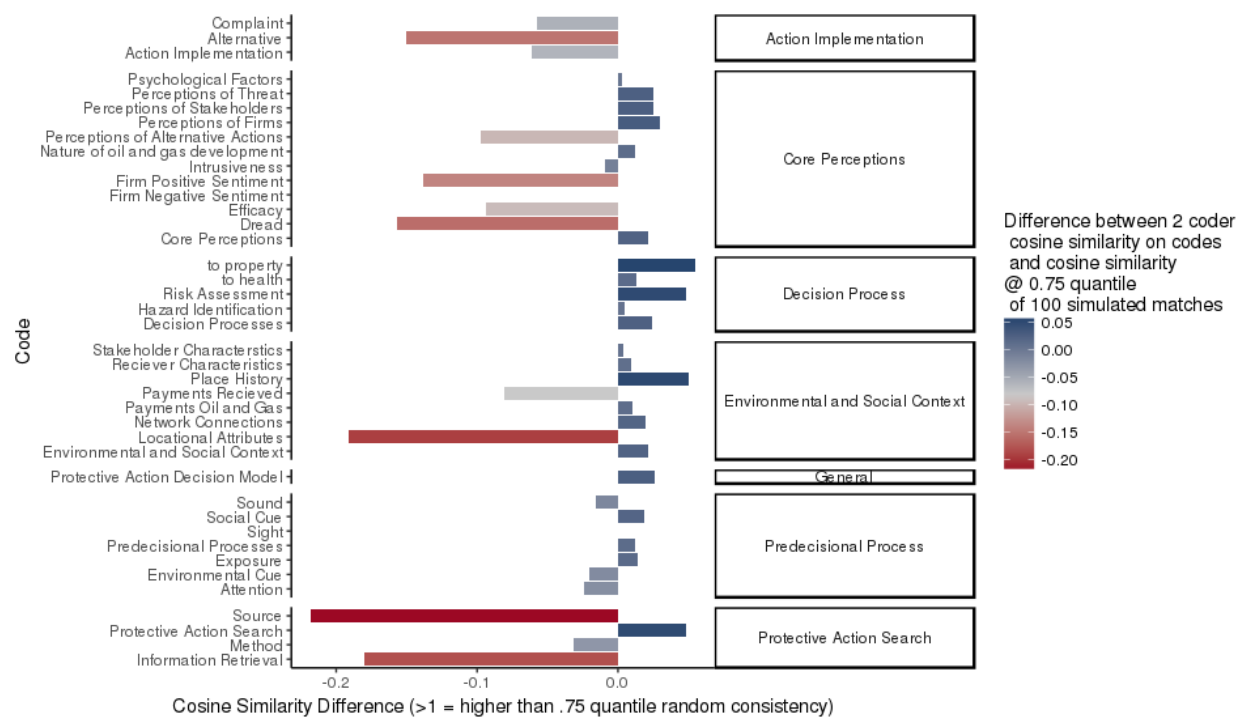


Figure A3.3: Textual similarity between commonly coded segments compared to the 75th percentile of similarity between that code and another randomly selected code.

SENTENCE BASED AGREEMENT

Based on the two fully-coded transcripts of the third interview, this table presents agreement scores when unitizing by sentence level chunks of text. Codes were applied freely to text and did not exactly correspond, and thus, this may underestimate true agreement if only half

of a sentence was included in a tag. However, as the two coders had different coding units, this approximates a classic percent agreement score. Notably, there are generally high intercoder agreement but low Cohen's kappa. The average intercoder reliability 82.29%.

Table A3.2: Intercoder comparisons for unitizing a single interview at the sentence level.

Code Name	Intercoder Agreement	Cohens K	Agree False	Agree True	Disagree	PADM Stage
Action Implementation	95.15	0.01	1488	1	55	Action Implementation
Alternative	83.52	-0.04	1356	1	187	Action Implementation
Complaint	98.06	0.00	1522	0	22	Action Implementation
Core Perceptions	47.05	-0.12	822	121	601	Core Perceptions
Perceptions of Alternative Actions	83.96	-0.04	1362	0	182	Core Perceptions
Efficacy	84.93	-0.04	1373	0	171	Core Perceptions
Perceptions of Firms	77.80	-0.03	1279	13	252	Core Perceptions
Perceptions of Stakeholders	68.11	-0.09	1167	15	362	Core Perceptions
Firm Negative Sentiment	83.70	-0.08	1359	0	185	Core Perceptions
Nature of oil and gas development	85.73	-0.02	1382	0	162	Core Perceptions
Perceptions of Threat	73.30	-0.09	1240	1	303	Core Perceptions
Intrusiveness	87.49	-0.05	1401	1	142	Core Perceptions
Psychological Factors	83.70	-0.06	1358	1	185	Core Perceptions
Firm Positive Sentiment	94.10	-0.02	1477	0	67	Core Perceptions
Hazard Identification	87.93	-0.05	1407	0	137	Decision Process
to property	90.04	0.24	1410	21	113	Decision Process
Decision Processes	61.41	0.01	1075	31	438	Decision Process
Risk Assessment	88.28	0.21	1390	21	133	Decision Process
Place History	91.72	0.51	1392	58	94	Environmental and Social Context
Environmental and Social Context	50.57	0.04	677	306	561	Environmental and Social Context

Locational Attributes	88.28	-0.04	1411	0	133	Environmental and Social Context
Receiver Characteristics	67.93	-0.10	1168	12	364	Environmental and Social Context
Stakeholder Characteristics	50.57	-0.11	914	69	561	Environmental and Social Context
Payments Oil and Gas	89.87	-0.02	1427	2	115	Environmental and Social Context
Payments Received	95.59	-0.02	1494	0	50	Environmental and Social Context
Network Connections	59.03	-0.05	1017	62	465	Environmental and Social Context
Social Cue	89.52	-0.05	1425	0	119	Pre Decisional Process
Exposure	75.86	-0.02	1251	19	274	Pre Decisional Process
Predecisional Processes	64.58	-0.06	1103	39	402	Pre Decisional Process
Sight	91.10	0.09	1435	8	101	Pre Decisional Process
Environmental Cue	84.93	0.02	1364	9	171	Pre Decisional Process
Sound	93.66	-0.02	1472	0	72	Pre Decisional Process
Attention	92.33	-0.04	1457	0	87	Pre Decisional Process
Information Retrieval	96.21	-0.02	1501	0	43	Protective Action Search
Protective Action Search	93.83	-0.03	1474	0	70	Protective Action Search
Source	97.44	-0.01	1515	0	29	Protective Action Search
Method	96.92	-0.01	1509	0	35	Protective Action Search

INTRARATER TEST

Following the proposed method of recoding established chunks, I re-coded all of the previously defined excerpts from a single interview. The statistics for these results presented below were calculated in Dedoose based on 114 units of text, following the methodology of

Campbell et al (2014). These results are interpreted in the main text.³

Pooled Kappa: 0.42

Table A3.3: Individual Cohen's Kappa scores for each code.

Code	Cohen's Kappa	Agree	Disagree
Place History	0.48	108	6
Hazard Identification	0.17	106	8
Core Perceptions	0.24	69	45
Action Implementation	0.25	95	19
Environmental and Social Context	0.49	85	29
Protective Action Search	0.58	110	4
Perceptions of Stakeholders	0.36	76	38
Attention	-0.02	108	6
Receiver Characteristics	0.74	106	8
Exposure	0.54	101	13
Predecisional Processes	0.5	98	16
Stakeholder Characteristics	0.46	87	27
Decision Processes	0.26	86	28
Risk Assessment	0.29	102	12
Perceptions of Threat	0.47	97	17
Alternative Action	0.59	102	12

Excerpt: 1, Location: 106 - 665

It's turning into California. You know ever since they legalized marijuana oh crap. I mean you know it's a it's a catch twenty two. I mean housing has gone up. You know everything from renting to buying is just it's very hard for you know my roommate her son and son in law and daughter they're really thinking about moving to Mexico they can't afford to live here. I mean they've got both got to hold two jobs just to pay rent and it keeps going up and can't find a home to you know to be I. It's just gas food. Everything has just gone up. No breaks.

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History
Receiver Characteristics	Environmental and Social Context
Environmental and Social Context	

Excerpt: 2, Location: 1116 - 1478

es well give it another ten years cause yeah. This used to be all wheat land around here and you know I mean the seventy six corridor here You know from Brighton on out pretty soon that's going to look just like I twenty five from Denver to Fort Collins. It's just going to be nothing but you know industrial and you know commercial. Oh well progress right.

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History

³ For a full description of the test method, see <http://www.dedoose.com/userguide/interraterreliability>.

Receiver Characteristics	Environmental and Social Context
Environmental and Social Context	

Excerpt: 3, Location: 1718 - 2710

I was born here. So I've lived here all my life and we made the big whopping move of what nine miles from Keansburg the Hudson. Dad was a farmer you know his whole life and um Anyway he retired and kept the dry land and bought this land here forty six years ago and built the house. So I've been here forever. (Laughing) You know seen a lot of changes and sometimes I look around and I think oh Dad you don't want to see this. I mean you know it was growing and developing during his lifetime and I think of you know his eighty five ninety years of progress that he's seen from nineteen thirteen. He was born. You know. So he's seen a lot. but you know, now with the computers and technology it would blow him away it would blow him away. Yeah and I don't know. Yeah I've seen. You know I've seen a lot of progress a lot you know I just always wonder where are all these people coming from you know? all the housing developments and everything and then where are they coming from?

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 4, Location: 1736 - 2003

So I've lived here all my life and we made the big whopping move of what nine miles from Keansburg the Hudson. Dad was a farmer you know his whole life and um Anyway he retired and kept the dry land and bought this land here forty six years ago and built the house.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Receiver Characteristics
	Environmental and Social Context

Excerpt: 5, Location: 3287 - 3644

mean either you know but just listening to me it was just fascinated by the open space that we have out here and and yet I see it closing in on you know because what I was a kid teenager in my twenty's it was all farmland around here you just you know dirt roads and farmland. And now look. We've got highways. Loves truck stop. And lots of gas wells.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Perceptions of Threat
	Receiver Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 6, Location: 4102 - 4754

its pretty much retired. OK if you know what I mean like I say Dad He retired from the major farming you know he did wheat sugar beets pinto beans corn. You know and he sold all of that in Keansburg and he just kept the dry land to keep him busy you know just to have something to do and he did that for about twenty years and then passed away and I don't know. I ended up inheriting the place. And. bfff I just try to maintain it. You know there's I just live on fifteen acres. OK you know ten acres is in thistle on the other side of the field here and I just try to keep this place going and you know I worked for AT&T for twenty five years.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 7, Location: 4754 - 5551

OK and they kicked me out four months before retirement. So that saved them a penny there. Parity Yeah you know

and so I had just been trying to survive since then. You know mad at the government. You know they surpassed all our work to other countries. You know. closed down and I just got the attitude. why should I go to work for them anymore? So everything is under the table that I make you know what I'm saying I mean that sounds really not American but it's you know I just figured they weren't too American with a lot of us you know in our factory work and stuff and I have a a lot of friends are still trying to get jobs here and you know they get a job for your two and it's always it's never full time. It's never permanent It's always. What you call it... temporary... Yeah you

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 8, Location: 5685 - 5792

so actually you know I'm not working I'm just trying to maintain and live and survive if that makes sense.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 9, Location: 6130 - 8325

Well how they interacted with me. Was pretty shitty They didn't tell me they didn't discuss this gas development over here at all with me. Now they did with the neighbor because it was on his land. But I did have you know there was a road access Dad Dad signed a contract or he was in the process of making a contract with the gas and oil [[company]]. You know just to give him service access a road you know to a couple um well heads here in the next field. And so then he died and they came back to me you know and I figured well you know dad he was sensible he knew what he was doing so I went ahead you know signed the contract with them and you know it was just maintenance you know maybe once or twice a week to pick up would come through go down. Check the little well heads and leave and this went on for like ten years. All of sudden boom. You know there was trucks see equipment they were you know they were drilling behind Luppy's a new well. And like I say it was his property there was nothing I could say. But I'm thinking you know they never discussed anything with me zero what they were going to do what they were planning. nothing. And um in the you know they they just they did they just kind of acted like Move over old lady. We've got stuff to do here were important and you're not and so I just kind of waited and waited and watched all the construction and all the equipment come in and everything and and the drilling and I'm thinking they're not sticking to their contract because they're putting in new wells which doesn't apply to the contract of the road access. You know the roadies easement. and I just felt like if I said something at the time they would swindle out of it and change things you know and make it you know in their favor. So I waited and finally one day you know they had their little well signs you know that says you know the location of blah blah blah. They had written on permanent magic marker permanent marker the new Chavez wells. And to me that broke the contract right then and there because they never discussed it with me. They never you know offered to pay for you know an easement to more wells are you following me kinda.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Perceptions of Threat
Receiver Characteristics	Risk Assessment
Environmental and Social Context	Action Implementation
Core Perceptions	Attention
Predecisional Processes	Core Perceptions
Exposure	Predecisional Processes
	Decision Processes
	Exposure
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 10, Location: 7155 - 7905

But I'm thinking you know they never discussed anything with me zero what they were going to do what they were planning. nothing. And um in the you know they they just they did they just kind of acted like Move over old lady. We've got stuff

to do here were important and you're not and so I just kind of waited and waited and watched all the construction and all the equipment come in and everything and and the drilling and I'm thinking they're not sticking to their contract because they're putting in new wells which doesn't apply to the contract of the road access. You know the roadies easement. and I just felt like if I said something at the time they would swindle out of it and change things you know and make it you know in their favor.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 11, Location: 7907 - 8324

So I waited and finally one day you know they had their little well signs you know that says you know the location of blah blah blah. They had written on permanent magic marker permanent marker the new Chavez wells. And to me that broke the contract right then and there because they never discussed it with me. They never you know offered to pay for you know an easement to more wells are you following me kinda.

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Stakeholder Characteristics
Core Perceptions	Receiver Characteristics
Predecisional Processes	Environmental and Social Context
Decision Processes	Attention
Exposure	Predecisional Processes
Hazard Identification	Exposure

Excerpt: 12, Location: 8348 - 8957

So I called my lawyer and that's when the whole thing started and they just they lied they cheated. You know they they, I land locked because they you know they had this access here to the new well that they dug and I own half of the road over here which they were utilizing to go behind Puppy's house, you know where they were drilling and they paid me a first for that you know for the easement behind the Loopy's House and I was like OK fine you know but then later on I found out that Luppi stated that he would let them do that only temporary until the well was dug and then they had to close that down.

Code Applications

Trainer Codes	Trainee Codes
Action Implementation	Perceptions of Threat
Decision Processes	Stakeholder Characteristics
	Risk Assessment
	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders

Excerpt: 13, Location: 8651 - 8771

you know where they were drilling and they paid me a first for that you know for the easement behind the Loopy's House

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 14, Location: 9005 - 9899

And so they consider ok we'll just use the easement over here you know on my property for all trucks and stuff without telling me without you know asking me or say oh this is what we're going to do or you know going to have to revise the contracts they didn't say nothing nothing at all. And so my lawyer and I you know I got together with my lawyer and we shut him down.

You know it was like you can't cross my property anymore until this gets straightened out and then they continued to go across the property in the middle of the night. 10:46 You know instead of going all the way around and they never they just never brought up any more contracts and um, it was a year and a half of fighting with the lawyer with them and the equipment they brought in and the separators were so noisy you couldn't sleep at night. You couldn't have your windows open. It's like an amphitheater. You

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
	Risk Assessment
	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure

Excerpt: 15, Location: 7066 - 7152

Luppy's a new well. And like I say it was his property there was nothing I could say

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Core Perceptions
Environmental and Social Context	Perceptions of Stakeholders

Excerpt: 16, Location: 9893 - 10291

. You know from where they're positioned you know it would come up here it would bounce across there's the shed walls and it would just magnify the sound and after a while I told my lawyer I said My ears are sore. I can't even wear earplugs anymore. You have to turn up the T.V. way loud just to drowned out there are noise and you know they and the one time you said well we had you know people

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Risk Assessment
Predecisional Processes	Core Perceptions
Exposure	Predecisional Processes
	Decision Processes
	Exposure

Excerpt: 17, Location: 10170 - 10659

T.V. way loud just to drowned out there are noise and you know they and the one time you said well we had you know people out here and to you know do the sound in you know the papers are in and we applied that all and I found out from COGCC. Jim precept He says he never got any papers the report isn't in yet so they just kept lying to me through the whole thing but and bottom line is you know they knew they were in the wrong. And they've they've finally kind of settled up with me.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 18, Location: 10661 - 11503

But I think if I took them to court I could have ripped them a new one to be honest with you but I just was tired of fighting Ryan. You know after a year and a half and low frequency vibration ahhhh. My windows would rattle it was so bad we couldn't sleep. I mean you just, you know, have you ever experienced low frequency vibration? that it's like you can feel it hear it at the same time you can't really divide it you can't really divide it you can't really feel it you can't really hear it is just combined together. It's nerve wracking. It's kind of like being in a theater and you can hear the low bass vibration come in from the next

theater room, You know play in their movie, It's kind of like that. yeah yeah which freaked me out when I went to see a movie a like a year later and that vibration for a bit was like oh crap.

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Perceptions of Alternative Actions
Exposure	Risk Assessment
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure

Excerpt: 19, Location: 11504 - 12292

And I fought that and fought that and cog, C O G C C fought it with me and I don't know how Jim did it but you know he had some meetings with them and finally got him to get rid of the separators. And then they brought other people out to measure the low frequency vibration and you know," oh yeah it is too high" and they finally got their equipment turned down and you know it was just a battle for a year and a half with them. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass them on the on the highway and I feel like a dog with his head out the window barking at em.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
Core Perceptions	Environmental and Social Context
Perceptions of Stakeholders	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders

Excerpt: 20, Location: 11933 - 12196

. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 21, Location: 12196 - 12290

them on the on the highway and I feel like a dog with his head out the window barking at em.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 22, Location: 12437 - 13104

And then Anadarko put in a big rig down here on the end of road forty three and oh the traffic last summer was just unreal. You know the truckers and bringing in equipment now it's mellowed out I guess you just have to kind of put up with it and wait for them to get their facilities built and settled in and you know before it's all over with. but It's. Is just nothing but a noisy dusty dirty mess the whole time and truckers you know they get used to the route and they don't care they don't care how fast they go or you know just no respect to the people around you know they'll drive sixty miles an hour down the dirt road and, i don't know. I got an attitude

Code Applications

Trainer Codes	Trainee Codes
Environmental and Social Context	Perceptions of Threat
Predecisional Processes	Core Perceptions
Exposure	Predecisional Processes
	Exposure

Excerpt: 23, Location: 12854 - 13105

and truckers you know they get used to the route and they don't care they don't care how fast they go or you know just no respect to the people around you know they'll drive sixty miles an hour down the dirt road and, i don't know. I got an attitude

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 24, Location: 13943 - 14835

You know it took several years to you know and now I'm trying to get plants growing along the fence line you know to eventually grow up hide that. You know but they took my whole view away from the mountains. You know what I mean it's kinda and they where their tanks are like I always thought of developing that ten acres. You know divided into thirds you know but the first third now your vision West is tanks. You know and I said you ruined my property value, "but property value is high now." and blah blah blah and I'm going Yeah but not with tanks sitting right in front of ya. You know that doesn't help the property value at all. You know. So you know couldn't argue that point with. I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week.

Code Applications

Trainer Codes	Trainee Codes
Place History	Perceptions of Threat
Receiver Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 25, Location: 14643 - 14911

I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week. Interviewer: And you said you got them to downsize. Yeah yeah me cogcc.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
	Environmental and Social Context
	Decision Processes

Excerpt: 26, Location: 14913 - 15462

Interviewer: I'd love to come back to talking about your your interactions with COGCC because you do see through interesting to me but I wanted to also are so what is the primary method by which you learn about these sites you have this one here here how do you. Visual just by watching them. Seeing what they're doing seeing how they affect me. I guess you know sometimes I look up on the Internet. The companies and what they are and how big they are and you know I just had a little you know [[company]] gas and oil is the one who did this one.

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Protective Action Search
Exposure	Stakeholder Characteristics
	Environmental and Social Context
	Predecisional Processes

	Decision Processes
	Exposure

Excerpt: 27, Location: 15413 - 15818

[[company]] gas and oil is the one who did this one. So they're just little guys so to say but I think they were the shittiest ones of all. Seems like the bigger guys have more respect but I think two the more land you have the more respect you're going to get from. You know if you're just a little small fry with fifteen acres I feel like they kind of give you a different attitude like you ain't nobody.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Receiver Characteristics
Perceptions of Stakeholders	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 28, Location: 15679 - 15741

You know if you're just a little small fry with fifteen acres

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 29, Location: 15894 - 16491

Not really no um my one roommate she she interacted with Anadarko down here because of the speed of the trucks and everything and she says I've got grandchildren that play around here and stuff and she says you guys just speed up and down this road it's ridiculous. So they kind of worked with her a little bit you know but their speed limit sign is in their facility. Slow. Fifteen miles an hour. It's not you know directed to the road and I know they're legally there's no speed limit but, you know they tell their drivers to slow down and that's up to the drivers. You know they're attitude

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 30, Location: 17703 - 18360

No that's basically i just sit my interactions with you know [[company]] themselves and their contractors. I told them one day one contractors they came in to resurface. I mean to take out the road you know and redo my land they dumped a bunch of tires on my property. Yeah I mean just junked em out there and you know I told them about that and i says you know I said, "Birds of a feather flock together". If you've got you know dirty sneaky contractors What does that make your [[company]] look like? if these are the contractors you hire you know you look the same way. You're not going to hire any honest contractors and how does that make make you look

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Perceptions of Stakeholders

Excerpt: 31, Location: 18494 - 19957

Like well like I say the ones that came out here to redo my land. You know while they were doing it. They broke tree branches. They just had no respect the dirt they dumped was full of chunks of cement. Now that it isn't topsoil. You know in my book. Of course they dumped their tires and they took them back. I didn't say a word to them about their tires what I had to do, I had like forty old tires. You know tractor truck tires blah blah blah. And they kept using my access here and I tried to block it with branches and stuff like that they just ran right over them and continued using the road to the facility. So I got those tires and I piled them up on both ends. You know. to block em you're not coming through my property. You know. And so when they came in to redo the field they saw the pile of tires there that they moved off to the side. So they threw their tires in there with it and my brother and I you know we were out walking around and Brian goes. These aren't your tires. You know you recognize them a semi truck tires and sure enough you know they you know so I put my tires back and left there's sitting out in the middle of everything and they took them. I didn't say a word to him. I did too [[company]] but they took them. So but I just thought you sneaky bastards what the hell. I mean you know these tires weighed three times more than I did. How am I going to move them around and get rid of them and dispose of them?

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Core Perceptions
Exposure	Perceptions of Stakeholders

Excerpt: 32, Location: 18494 - 19176

Like well like I say the ones that came out here to redo my land. You know while they were doing it. They broke tree branches. They just had no respect the dirt they dumped was full of chunks of cement. Now that it isn't topsoil. You know in my book. Of course they dumped their tires and they took them back. I didn't say a word to them about their tires what I had to do, I had like forty old tires. You know tractor truck tires blah blah blah. And they kept using my access here and I tried to block it with branches and stuff like that they just ran right over them and continued using the road to the facility. So I got those tires and I piled them up on both ends.

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Perceptions of Threat
Action Implementation	Risk Assessment
Decision Processes	Action Implementation
Hazard Identification	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 33, Location: 19358 - 19609

So they threw their tires in there with it and my brother and I you know we were out walking around and Brian goes. These aren't your tires. You know you recognize them a semi truck tires and sure enough you know they you know so I put my tires bac

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Risk Assessment
Exposure	Attention
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 34, Location: 20032 - 20265

When they were building the facility they would park on my side with the fence you know like if somebody would come over and visit their honey for lunch or something. They used my land as a parking lot. I thought that's pretty rude

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Perceptions of Threat
Predecisional Processes	Risk Assessment
Decision Processes	Core Perceptions

Exposure	Predecisional Processes
	Perceptions of Stakeholders

Excerpt: 35, Location: 19689 - 19754

I didn't say a word to him. I did too [[company]] but they took them.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Action Implementation
Action Implementation	Decision Processes
Environmental and Social Context	
Decision Processes	

Excerpt: 36, Location: 20400 - 21898

Yes. Yeah yeah but to me it's all one and the same you know what I mean I had an auction here and we were getting ready for it. And like it was on Thursday. And we were setting up because it was going to be open to the public on Friday so that they could come in and see what to bid on for Saturday. So a couple of the workers you know came over and they wanted to see you know the stuff and I go it's not open to the public until tomorrow we're busy out here setting up and he got pissy with me and he's like well who are you. I want to come look and I'm thinking well shouldn't you be over there? Workin? Aren't you supposed to be working? and he just really had a bad attitude and you know it's just like I'm not going to have them go around and look at the place when we're you know busy working and who knows what they're going to end up taking I mean you just don't do that but he just felt like he had the right to come over here and and you know and I said no and and he didn't like that. So I just I just didn't get it. you know I hate to put in the fact you know of you know I'm a woman, you know ,and they're but you can't help feeling that way. You just really can't. I'm sure you know if my my bro would stood there and told them No it's not open to the public today he would have gotten more respect. And you know this is kind of what I was fighting too was like I say I just I just hate that you know. This is you know Man Woman deal that, It was definitely evident that

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Receiver Characteristics	Risk Assessment
Environmental and Social Context	Receiver Characteristics
	Environmental and Social Context
	Core Perceptions
	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 37, Location: 21114 - 21898

I'm not going to have them go around and look at the place when we're you know busy working and who knows what they're going to end up taking I mean you just don't do that but he just felt like he had the right to come over here and and you know and I said no and and he didn't like that. So I just I just didn't get it. you know I hate to put in the fact you know of you know I'm a woman, you know ,and they're but you can't help feeling that way. You just really can't. I'm sure you know if my my bro would stood there and told them No it's not open to the public today he would have gotten more respect. And you know this is kind of what I was fighting too was like I say I just I just hate that you know. This is you know Man Woman deal that, It was definitely evident that

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 38, Location: 22560 - 22702

Well yeah they made improvements along the way but it was a real fight so you know they just couldn't seem to understand why I was so upset.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 39, Location: 23005 - 24369

Well I kind of started out with their land managers you know two young guy. And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know. And I told him they were my trees of had grown so instead of the road being straight down along the trees course their spreading out like this which was taking more of my land you know and I showed ryan his name was ryan too. And I showed Ryan that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean. And there was excuses like that through the whole process. Well what is this vibration ryan well I don't know. And I just know when he drove out on the road he wouldn't think twice about it. And. And then they said OK well we'll put up sound walls so they put in the sound walls we're going to pay an extra thousand dollars for the road easement you know to put in the sound walls never saw that and um they put in the sound walls but the thing was was that it was like a box that was opened on top and the noise was still coming out it didn't reduce the noise at all. zero. You know so complained again and they come out and and I just finally, I don't know exactly how it worked,

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Risk Assessment
Core Perceptions	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 40, Location: 23082 - 23284

And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know.

Code Applications

Trainer Codes	Trainee Codes
Action Implementation	Stakeholder Characteristics
Decision Processes	Action Implementation
	Environmental and Social Context
	Decision Processes

Excerpt: 41, Location: 24370 - 24703

You know but you know somebody could said you know to call COGCC and file a complaint and then that's where I really started getting help. Well my lawyer told me. Duh. Yeah my lawyer told me to contact COGCC. File a complaint and THEN they started acting moreso once when COGCC got in on it then they started a different behavior.

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Protective Action Search
Decision Processes	Perceptions of Alternative Actions
	Core Perceptions
	Decision Processes

Excerpt: 42, Location: 24424 - 24509

call COGCC and file a complaint and then that's where I really started getting help.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Action Implementation
	Core Perceptions
	Decision Processes

Excerpt: 43, Location: 24510 - 24583

Well my lawyer told me. Duh. Yeah my lawyer told me to contact COGCC. F

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Protective Action Search
Decision Processes	Decision Processes

Excerpt: 44, Location: 24581 - 24703

File a complaint and THEN they started acting moreso once when COGCC got in on it then they started a different behavior.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Stakeholder Characteristics
	Environmental and Social Context
	Perceptions of Stakeholders

Excerpt: 45, Location: 24744 - 25896

. To the noise to the vibrations to the contract, well the contracts they had to you know apply through my lawyer because they knew that they were wrong there. You know. And basically all I wanted was them to fix the noise get rid of the vibrations and get the hell off my land. You know which meant that they had to go around to the neighbors and find other accesses because they couldn't on this side they couldn't on that road because I wouldn't give them permission over there. You know even if [Neighbor] gave them permission I still owned half the road. So they couldn't. So I basically had him land locked there for a while and everything was shut down the facility was like non operational and I know that pissed them off. And I loved it. I'm sorry but hahahaha And then they;d fire it up again you know I'd call my lawyer my lawyer would contact them shut it down again you know until they got things fixed but they. Just for, for months they wouldn't fix anything. And they'd started up again and try to act like normal and it's like this isn't going to work you guys you know you're just I just such a long process such a nightmare.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
	Risk Assessment
	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure

Excerpt: 46, Location: 24540 - 24581

Yeah my lawyer told me to contact COGCC.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Protective Action Search
Environmental and Social Context	Decision Processes

Excerpt: 47, Location: 26057 - 26789

Basically I did all the communications My lawyer coached me. OK so to say now I found out later that [[company's policy is that once they are contacted by somebody's lawyer it's the lawyers all the way. You know there isn't any other interaction. Well I can afford that. Here you know what I'm saying and and I really didn't realize it to be honest with you. You know and with the coaching of my lawyer you know to write the letters and I wrote letters to just about everyone at [[company]] including Channel 9 News COGCC. And I just sent it out to everybody. Shit that's what a public relations Windy Wheaton-burger when the Wendy Widenmeyer that's when she contacted me and from [[company]] and then we started getting things rolling.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Protective Action Search
Environmental and Social Context	Stakeholder Characteristics
	Action Implementation
	Environmental and Social Context
	Predecisional Processes
	Decision Processes

Excerpt: 48, Location: 26737 - 27154

[[company]] and then we started getting things rolling. But she also kind of let me know that contacting the news was a real no no. You know that they would fight that or whatever and I said hey you backed me up against the wall. What else am I going to do and how did she know you contacted news? because it was because on the e-mail it showed who I sent it all to. So they knew everybody else that it was sent to.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 49, Location: 27198 - 27793

To Them they didn't want any publicity. Of course, you know why would they want to be on the news with an irate farmer you know with them trespassing against their will. You know they want to kind of publicity. And. She very much kind of put it I couldn't tell you how eloquently she phrased it, but pretty much she says you know if you continue this with the news we will squash you like a bug. And I told my lawyer that I says I couldn't tell you exactly how she said it but that was the vibrations that came through you know if I continued to do that they'd try to squash me like a bug.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 50, Location: 27796 - 29704

Interviewer: But Wendy is she your primary person you talk to at [[company]] (yea) you know and how often do you engage with her after that was a one time occurrence was it Every couple weeks at least once a month and they'd come out and we'd have meetings of what they could do with the facility to downsize it to make it better to make visuals better. You know they did you know did try to work with me there but there are they had a lot of influence between my lawyer and C O G C C too they were pushed up against the wall so to say you know they needed to start complying and which they did I have to admit you know but it was a battle. It was a fight and then you know they brought out the other. You know like the had putting in the machinery. You know those, those guys you know they would bring in a couple of them and would discuss what they could do and you know like what it would cost to put in trees. You know for the, To hide. You know. Yeah. And just stuff like that but you know but they offered to pay me to put in the trees and my brothers going Well when his dad dealt with the gas companies you know they would go ahead and do all that you know they'd get the trees bring them in and plant but [[company]] says no we don't do that. And you know it's like OK fine whatever. I don't. Hell I mean I didn't know how all the gas wells worked and stuff and you know my Dad had, we didn't really have any anything you know in our farms as far as that went. So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about it so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the

ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat
	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 51, Location: 29270 - 29704

So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about it so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions
Predecisional Processes	
Exposure	

Excerpt: 52, Location: 29946 - 30058

Well I think the benefits was those that owned a lotta land and they got you know buku bucks off of royalties.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions

Excerpt: 53, Location: 30158 - 30661

ey the roads getting pretty dusty You need to water it down you know this is eroding and you need to fix that you know they would come in and take care of it right away and that was more like bigger companies like mobile. And you know. Um, Anadarko. they had they're pretty good. I have to say you know if you give a complaint at least they look into it. They don't ignore you. You know till you call In Your lawyer and C O G C C and then well maybe we oughta do something about it because you know

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 54, Location: 30710 - 30913

Yeah I mean you know they're pretty good about you know trying to take care of complaints. Yeah but [[company]] they just didn't seem to don't wanna. You know. I don't know how they interacted with [Neighbor].

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 55, Location: 30915 - 31432

I have no idea [Neighbor] never came over and talked to me about you know the development in this is what's going on but I had No idea what the hell was going on all that I saw I was them building this facility over here and the only thing I could

tell myself was it's not your land you can't say anything. I kept thinking well it's better than loopy putting up a shooting, haha yeah a practice shooting place. Yeah bang bang bang all day long of so you know I have to thank my lucky stars the look on the bright side.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 56, Location: 31435 - 32242

interviewer: Gosh. Could you tell me a little bit about your interactions with Anadarko. Oh well I didn't really have any just what you know what my roommate did you know about the fast trucks you know and her grand kids here and everything and you know they pretty much you know like I said they got on it and told their drivers to slow down. You know it was up to the drivers if they would or not you know what I'm saying you know but I have to say that. Yeah you know they did you know try to work with it and keep the road dust down and you know stuff like that. So, I really don't have any complaints against them. You know I mean I understand that they were developing that that there was going to be a lot of traffic and everything and you just kind of had to put up with it. It's progress.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 57, Location: 32375 - 33654

My only guess is isn't Anadarko from Texas? I don't know they were developing. I mean their main main [[company]] is Texas. American. OK USA [[company]] is Canada. They're from Canada. And I Well alright. This kind of goes back to me working with AT&T. You know we were AT&T and then we spun over to Alluscent and Abuja . And then they sold out to Celeste. And Celeste you know was a Canadian [[company]]. And man they changed that factory I worked there for one month and I said I'm outta here. I'm quitting and I literally did quit after twenty I mean I already lost my retirement from Avia you know from that was where our cutoff was so if you wanted to continue working with Celestica in the factory, you know that was your choice but I mean man they took us twenty years back all the progress we had made in twenty years at the factory. You know I just thought I can't go backwards. You know so that was an attitude against a Canadian [[company]] in the first place. OK (OK)So then here comes [[company]] when their attitude with me on this gas [[company]] in that in helping any and I just think because they were a United States [[company]] they felt like maybe they can get away with more. They had more tax breaks they had more I don't know I I really couldn't tell you what it was.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 58, Location: 33944 - 34688

learned they were crooks and to never trust them again. I'm sorry to say I learned if you're a small fry you're going to go through hell trying to prove to them that they're wrong or there are you know not doing something correctly, or you know, something's amiss. You know compared to their attitude of we're not doing anything wrong. We're fine. What's your problem type attitude. Did you ever feel like there was the chance for them to learn from you? Conversely. You would think they would. But I don't think so. I think they just kept on doing business the same way I heard they were up for sale that [[company]] wanted to you know sell out but I don't know if of course it hasn't happened because you know I still get their royalties.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 59, Location: 33943 - 34000

I learned they were crooks and to never trust them again.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 60, Location: 34018 - 34101

I learned if you're a small fry you're going to go through hell trying to prove to

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 61, Location: 34739 - 35625

No no this is when Dad bought this land here the fifteen acres he bought the mineral rights with it (okay). Yeah. Interviewer: So it's not split. It's. Some some of the in between here and split. So you have the land is different than minerals right? Yeah yeah see like like Lupi now when he bought the land he didn't buy any mineral rights. You know he's got twice the properties he's got thirty acres I've got fifteen. But he didn't buy the mineral rights so the mineral rights still goes over to Dave who who owned the land in the first place. Dad talked David into buying the mineral rights. You know dad was smart. So loopy basically he just got paid for surface um access. Yeah yeah he doesn't get any monthly royalties or anything. I get like what three percent. I mean you know my check is one hundred eighty dollars a month. Don't spend it all at one place.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Perceptions of Threat
	Receiver Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 62, Location: 35807 - 37115

Do you did your interactions with them change your perspectives on oil and gas development in general? Definitely. Definitely. You know everybody seemed to be pretty cool when we had when they did have the access. You know to those to the smaller wells over here and like I say there was a worker once twice a week and you know little pickup you know and you know everything was fine... until they decided to drill and put in a bigger well and screw things up. So yeah I just things kinda started out good and then really soured after they put in the well. Well I just kind of torqued me off that you know I mean I have semi trucks driving right by our bedroom windows at three in the morning. You know they they they the way they designed the facility to fill the trucks the trucks are pointed with their headlights right at the house. Three in the morning. You've got lights shining in your bedroom window in the kitchen. Ah! No respect! And And the noise and you know they're there when that well first opened up hell you know I kept track of how many trucks would come in and what time and sometimes there was twelve tankers a day. In twenty four hours. in a twenty four hour period. I mean there was just my peace and quiet that I had enjoyed here for forty years was gone. ah but there.

Code Applications

Trainer Codes	Trainee Codes
Decision Processes	Attention
Hazard Identification	Core Perceptions
	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 63, Location: 36509 - 37009

You know they they they the way they designed the facility to fill the trucks the trucks are pointed with their headlights right at the house. Three in the morning. You've got lights shining in your bedroom window in the kitchen. Ah! No respect! And And the noise and you know they're there when that well first opened up hell you know I kept track of how many trucks would come in and what time and sometimes there was twelve tankers a day. In twenty four hours. in a twenty four hour period.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions
Predecisional Processes	Predecisional Processes
Exposure	Exposure

Excerpt: 64, Location: 37009 - 37115

I mean there was just my peace and quiet that I had enjoyed here for forty years was gone. ah but there.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Threat
	Core Perceptions

Excerpt: 65, Location: 37322 - 38130

Yeah they did they rearranged it so that the trucks would be you know parked you know facing north. So the lights would you know shine out that way but eventually I got the You know so where nobody came in and out after eight o'clock at night you know I said this isn't right. You know to have you know tankers come in at one and four o'clock in the morning and so one of the stipulations was they could only come in during daylight hours. So that was cool. I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know go ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Alternative Actions
	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 66, Location: 37785 - 38365

I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know go ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor. You know what I'm saying and because I know they had a business, and, you know. So I was trying to meet him in the middle. But they they, they weren't meeting me in the middle of this and this was I mean even the the lights thing

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 67, Location: 38473 - 39598

This was before. Yeah this. This was before when they opened it up and you know all of this was going on and then like I say I really felt like I couldn't say anything until I got them legally. (OKAY) You know which was marking the sign out there with the new wells on there which broke the contract because I did not contract new wells with them. But I felt like I couldn't say anything until then because they would've worked around it some way. You know what I mean and screwed me. And then I would have these trucks going back and forth right here on the other side of my trees forever. And I asked my roommate we were sitting out there one morning and here come two tankers through there and I go barb, You really want to live with this? and she said, "hell no". And i said neither do I this is not right. You know like I said they never discussed this with me they never told me this is what was going to be happening. Things were going to get busy. They were going to put a new well. And you well they were going to put in a facility they were going to use my road to do it all on. But he said nothing.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Stakeholder Characteristics

Core Perceptions	Action Implementation
	Environmental and Social Context
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 68, Location: 39296 - 39597

you know like I said they never discussed this with me they never told me this is what was going to be happening. Things were going to get busy. They were going to put a new well. And you well they were going to put in a facility they were going to use my road to do it all on. But he said nothing.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Environmental and Social Context

Excerpt: 69, Location: 39630 - 39676

Nothing Nothing. (Seems weird). Not a word.

Code Applications

Trainer Codes	Trainee Codes
	Stakeholder Characteristics
	Environmental and Social Context

Excerpt: 70, Location: 40400 - 41131

They're my heroes. they are there on top. they're my heroes jim precupt worked with me and he came out one time and you know I go, " Jim is this noise right. This can't be right." You know and. They think you know pretty good little hassle with [[company]] themselves. You know but they were definitely on my side. You know and told him to get inspectors out and get people out to measure the noise the low frequency vibrations and there the guy said you know help me. Other than that I think I just would have gotten run over totally you know. I would have been in debt with the lawyer trying to fight him if it wasn't for COGCC. That's the a way I kind of see it. So you know between my lawyers and cogcc. They were my heroes

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Alternative Actions
Perceptions of Stakeholders	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 71, Location: 40400 - 41067

They're my heroes. they are there on top. they're my heroes jim precupt worked with me and he came out one time and you know I go, " Jim is this noise right. This can't be right." You know and. They think you know pretty good little hassle with [[company]] themselves. You know but they were definitely on my side. You know and told him to get inspectors out and get people out to measure the noise the low frequency vibrations and there the guy said you know help me. Other than that I think I just would have gotten run over totally you know. I would have been in debt with the lawyer trying to fight him if it wasn't for COGCC. That's the a way I kind of see it.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 72, Location: 41196 - 41558

Yeah you know it's kind of funny because right after all of this happened a guy will go over to the eastern and western slope or something. He wasn't representative around here anymore and it's kind of wondered about that maybe he was just darn good and they needed him over there. You know what I mean I don't know but it was like oh no! Don't take him away!

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 73, Location: 42189 - 42600

And they have pretty much complied. You know maybe once or twice there is a tanker that came in after hours but, You know why, you know get on the phone(whining noise) every time I mean for God's sakes. I want to get on with my life to you know what I mean and so they would be you know they have maintained it . I have to say that they've complied. But it was just hell trying to get them to that point.

Code Applications

Trainer Codes	Trainee Codes
Attention	Perceptions of Alternative Actions
Predecisional Processes	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 74, Location: 42680 - 43353

Several times he came out. Yeah yeah he would come out. Well you know you put in a complaint and they don't really necessarily come out and talk to the person they go to the facility itself, ok you know and look at it, and you know like it was those was such a nightmare and all i did was watch the windows and you know and I saw him go out there after I called him. And he shut them down right then and there. He shut the facility down. That was you know shut it down. And. The battle was on
 Interviewer: *Do you know if there was anything in particular that caused them to shut it down?The noise. Yeah. No it was way above their specs or whatever you call it.*

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Stakeholder Characteristics
Stakeholder Characteristics	Action Implementation
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Decision Processes

Excerpt: 75, Location: 42778 - 42931

they don't really necessarily come out and talk to the person they go to the facility itself, ok you know and look at it, and you know like it was those

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 76, Location: 42957 - 43179

all i did was watch the windows and you know and I saw him go out there after I called him. And he shut them down right then and there. He shut the facility down. That was you know shut it down. And. The battle was on

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Core Perceptions

Excerpt: 77, Location: 43277 - 43353

The noise. Yeah. No it was way above their specs or whatever you call it.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Threat
	Core Perceptions
	Predecisional Processes
	Exposure

Excerpt: 78, Location: 43496 - 44468

well You know from him as well there wasn't really any contact there at the time except they shut it down and I had like a week of peace and then they started up again and separators me and you know I mean you could probably hear him over in Hudson and I'm call them again. And Jim would come out and shut him down again and this went on about three or four times and then they started having meetings with [[company]] COGCC and [[company]] of what they can do to improve this because I just kept kept calling and kept complaining. You know my house is rattling the shop was rattling my windows I couldn't sleep because of the vibration and the noise. You know. And so it was just a battle just a tennis match back and forth between you know [[company]] and so I don't know somehow. um, well I was I was working that day and barb called me and she said Jim came out today. Don't you start (Talking to ca). And Jim came out and he said he, He said, there won't be any more noise..

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Perceptions of Threat
Exposure	Stakeholder Characteristics
	Risk Assessment
	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 79, Location: 44269 - 44473

um, well I was I was working that day and barb called me and she said Jim came out today. Don't you start (Talking to ca). And Jim came out and he said he, He said, there won't be any more noise.....

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Action Implementation
Environmental and Social Context	Core Perceptions
Core Perceptions	Decision Processes

Excerpt: 80, Location: 44665 - 45301

But no he came to the house and I wish I would have been here I would have hugged him so hard you know. But anyway he won when he went to that last meeting with [[company]] about he said he applied smoke and mirrors or whatever that meant and convinced them to get rid separators and there went the noise. Yeah. And so the next week I sat under the deck out there and just watched em dismantle the equipment and haul it out. I set my lawyer pictures of it all on trucks you know by bye! God I was so happy I was so happy but somehow he convinced them that they could continue their process of the gas and oil without the noisy separators

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 81, Location: 45521 - 45892

They're there to help take care of a small fries and big fries too. And thank God they are. you know I think they're doing their job and they're really respecting you know they're trying to show respect in and you complain and they're on it. I mean I just always got really good positive feedback from them. And results. and you know like I say thank God for C O G C C.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 82, Location: 46540 - 46702

Um Well they were still crooks. That's never gonna change you know even COG.C.C. had a fight with them so to say so, um I can't say it changed it for the better.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 83, Location: 46703 - 47130

I mean like I say I mean COGCC They're on the top they're my heroes so that perspective changed in you know respect for them you know and what they're trying to do for the state you know and you know with the oil companies and you know I know they're they're they're trying and you know work broke both ways. But what I liked is when they came in and saw something wrong they shut it down. And that's the way it ought to be.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 84, Location: 47098 - 47744

d that's the way it ought to be.. You know instead of you know wish washing around in our well OK you say I'll fix it next week. OK. So you know I'll talk to you in a month. You know they're there they're just like right on it. So I guess they have pretty good interactions or try to you know with the oil companies from what I saw you know what they're talkings with [[company]] and everything. But I wasn't at the meetings. You know wasn't the fly on the wall so I really don't know if it got heated or if they were you know you know compliant with each other or what. What it looked like on the inside I had said Yeah yeah I had no idea.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 85, Location: 46540 - 47744

Um Well they were still crooks. That's never gonna change you know even COG.C.C. had a fight with them so to say so, um I can't say it changed it for the better. I mean like I say I mean COGCC They're on the top they're my heroes so that perspective changed in you know respect for them you know and what they're trying to do for the state you know and you know with the oil companies and you know I know they're they're they're trying and you know work broke both ways. But what I liked is when they came in and saw something wrong they shut it down. And that's the way it ought to be.. You know instead of you know wish washing around in our well OK you say I'll fix it next week. OK. So you know I'll talk to you in a month. You know they're there they're just like right on it. So I guess they have pretty good interactions or try to you know with the oil companies from what I saw you know what they're talkings with [[company]] and everything. But I wasn't at the meetings. You know wasn't the fly on the wall so I really don't know if it got heated or if they were you know you know compliant with each other or what. What it looked like on the inside I had said Yeah yeah I had no idea.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 86, Location: 47918 - 48590

Interviewer: anything. You know that you learned about oil and gas development that you learned about the companies that you learned about your rights as a citizen could be any number of those things.) Yeah well I learned that I do have rights and they they they will help support your rights you know they won't blow you off. I just I think I just learned that you know you've been eventually there's people you can turn to for help. because there for awhile I didn't know who to turn to I you know I mean by then oil and gas [[company]]. You know it was kind of like you know those little ant down here and this big hill up there and you're never going to get over it

Code Applications

Trainer Codes	Trainee Codes
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 87, Location: 48592 - 48982

Interviewer: and you said you're the lawyer initially set you on the contacting the COGCC Yeah. Interviewer: I just had a curiosity. Prior to that. Did you have any awareness that C O D C existed or do you know have you heard of them? not really I mean you know you might have heard of them but you never really thought about it until you were involved. yeah You know. Yeah. Yeah

Code Applications

Trainer Codes	Trainee Codes
Attention	Protective Action Search
Predecisional Processes	Decision Processes

Excerpt: 88, Location: 49369 - 49831

no but I know that if something goes haywire. You know if they bring in the separators again or start with the noise I know I can call them. you know yeah I go yeah I got somebody I can depend on and I can probably call them without even a going to a lawyer. Now you know what I'm saying and that. Yeah you don't necessarily have to get a lawyer to go to them call them and say hey these guys are making a lot of noise over here and then they'll come out and.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Alternative Actions
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 89, Location: 49957 - 50268

I know I just I've never had a lawyer in my life you know what I saying and so this was all of a whole new program for me. You know I know people who call a lawyer every other week and you know just to stay away from all of that you know i just want a happy life. Leave me alone. i don't want to hurt nobody.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Environmental and Social Context

Excerpt: 90, Location: 50563 - 51450

well like when I wrote that one letter to [[company]] you know it was also emailed to C O D C C. Besides Channel Nine and all the other reps of, I don't know I just picked names off of the [[company]]'s web you know I just picked. Yeah I just took their you know Internet addresses and sent it to all of em man. So yeah and there and there is a couple times em Well Jim never really got back with me a whole lot. You know what I mean or I'd send him in you know I call him you know and I just figured he was busy. Of course you know how this wasn't the only gas well around here. Yeah but when he did get in contact

with me he got things done. You know but sometimes it'd be a couple weeks. (OK) yeah. And I was trying to be patient. I guess somebody else would been on and on the phone twelve hours I haven't heard from you know what's going on. You know but I would try to be patient

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Protective Action Search
Decision Processes	Stakeholder Characteristics
	Action Implementation
	Environmental and Social Context
	Decision Processes

Excerpt: 91, Location: 51453 - 52269

interviewer: but it wasn't usually instantaneous you know correct. Yeah. Yeah. Interviewer: Do you could you give me a rough numbers estimate as far as you know how many times it was that you called C O G C C or whether it was six seven times I'd have to say. Interviewer: Did they respond back to you each one of those times it just took some time or were there times where you had to call multiple times or they pretty much responded every time. (OK) yeah. you know I always figure probably with meetings between the [[company]] and them and stuff you know it'd take time to work things out. But in the meantime they just kept those facilities running no matter what if it shook my house or not, you know, until you know somebody really tromped down on him. They weren't going to shut it down. Period.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders

Excerpt: 92, Location: 53091 - 53495

I was in the middle because you know like I said I heard things from both sides but until your your put you know on the batter's mound to bat with the people they knew you know and then you got your opinions whether they're good or bad and how well the [[company]] works with you. Yeah I was kind of in the middle when they first did that ease access. You know to the chapman wells everything was fine. Yo

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions

Excerpt: 93, Location: 53440 - 53988

You know to the chapman wells everything was fine. You know we were all happy. We were working well together. And also that was, um, American resources. I believe was the name of the [[company]]. I have to look at the papers but then they changed over to [[company]] and they sold out and [[company]] bought em. So there was a difference of owners there too. Whereas American resources was much more compliant easier to work with a [[company]] [[company]] came in with the attitude of we're going to do what want to do it here and the hell with you little lady

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Threat
Perceptions of Stakeholders	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 94, Location: 53578 - 53864

American resources. I believe was the name of the [[company]]. I have to look at the papers but then they changed over to [[company]] and they sold out and [[company]] bought em. So there was a difference of owners there too. Whereas American resources was much more compliant easier to work with

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Core Perceptions
Environmental and Social Context	Perceptions of Stakeholders

Excerpt: 95, Location: 54156 - 54292

you get good and bad some love them to death and you know they work well and there's others like me that growl at every truck that goes.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 96, Location: 54524 - 55718

Oh my God it's over fifty two was you know that used to be a pleasant road to drive to ft Lupton now you got to drive defensively all the way there and back and I mean I've I have see these truckers do some of the stupidest damn things on that road. You know like they pass on a double line on a hill. It's kind of like they're not abiding by any of the road laws and yeah I just see stupid crap like to had you never seen it before. Interviewer: It's all new so this. Yeah so that's kind of changed and they have an attitude like move over. You know or or one time I was turning on of my road here off with fifty two. Of course you know I'm slowing down gotta blinker on their strappy coming from the other way. Usually I try to pull over. You know like a turn off lane. You know which rural areas don't have that right. You know they kind of need to remember that this was farm country at one time you know but now they drive like it's a city. You know like it's I-25. But anyway I look in my rearview mirror and all I see is a big cloud of white brake smoke and tire smoke. This guy was hollering ass and you know I'm trying to turn I'm waiting for traffic and and oh shit,

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Perceptions of Threat
Predecisional Processes	Environmental and Social Context
Exposure	Core Perceptions

Excerpt: 97, Location: 56670 - 57604

you know loopy as I watched Loopy screw my dad over time and time. You know dad was trying to be nice be to the neighborly person and right now I keep threatened him I'm going to take him to court but I don't want to. But He owns the lake here but he has to use my land to get his water to the lake which means he needs to maintain my land which he hasn't done for thirty years and it's been eroding and I've been fighting him for the last five years on it. In fact I did go talk to a lawyer about it. But you know. So now I can say we're on bad terms but we're not on any terms, at all. Zero. and I have to say kept you know I had to say this about my neighbor across the road I leant him my tractor one time he filled it with gas is diesel. Interviewer: Oh that's the worst Ruined it. And since there wasn't any paper signed or anything. I got screwed so. We're not on good terms. so I'm on my own here on the corner.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Core Perceptions
Environmental and Social Context	Perceptions of Stakeholders
Core Perceptions	
Perceptions of Stakeholders	

Excerpt: 98, Location: 57794 - 58170

No not with Weld County. Maybe C O G C C did you know what I mean yeah. With the containing But no not directly with Weld County Interviewer: And Hudson, that's where we are the right? Is it within the municipality or are you technically outside of that we're all in or outside the the town limits. Rural. So yeah. So it would just go right to weld county after that.

Code Applications

Trainer Codes	Trainee Codes

Stakeholder Characteristics	Core Perceptions
Environmental and Social Context	Perceptions of Stakeholders

Excerpt: 99, Location: 58798 - 59897

Get a whip on the companies. I like I say I've never really had to deal with Mobile or you know the bigger companies mine was you know those you know the smaller fries of the companies. I don't know I think it is probably depends on how the [[company]] is reacting toward that landowner you know to begin with you know if they're if they're going to be compliant with the complaints and go yeah this really isn't right or or um I don't know I think they should just be upfront with the people you know we're going to do well here. We're going to be needing this road. I mean they kind of need, I felt like they were just sneaking behind my back because they knew, they probably knew that this wasn't going to fly. So let's not say anything, let's just do it, and then once when it's there we'll say we're sorry that doesn't work. And they need to be more open of what they're doing with all the neighbors around everybody involved. Not just like Loopy owning the land to put the facility on because you know as far as I'm concerned I was just as involved one they were using my land to get to where

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Alternative Actions
Perceptions of Stakeholders	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 100, Location: 59938 - 60761

But two you know right across the fence the noise the commotion the trucks. I mean wouldn't that involve you know surrounding areas the houses. I mean I know I was not the only house. You know that they had to worry about. So maybe they just you know figured It's just one house who cares. One resident. And it wasn't like a neighborhood or anything. I don't know I don't know what they were thinking. I know what I think that they were thinking which wasn't very nice but I couldn't really tell you. So I don't know I think the [[company]] was just need to be more open and they need to discuss what they're going to do with everybody around not just the landowner that they're going to put the well on. Just because the noise the traffic and everything that's going on I think they need to be more open to that.

Code Applications

Trainer Codes	Trainee Codes
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 101, Location: 60993 - 62160

Well they did and they always said they had a new contract written up and you know what I never saw it I never saw it Interviewer: So it but they had one? never saw it. So how am I supposed to believe em. You know what I mean how'm I supposed to trust them with you know situations like that. Interviewer: So would they tell you this this is develop you know we have a new contract we have been there and just never show it to you or no later later they said that they they had when shit first hit the fan. You know what I mean and I told them you broke the contract you're taking up more of my land you know blah blah blah. They said well we're going to write We'll write up a new contract. You know. Well by then I decided I don't want these truckers going you know here this is ridiculous. You know and I already decided you know this is got to stop. But you know but like I said I just never saw another contract and I never saw a contract for this road over here that they said that they were going to pay me for so that was in the final settlement. Yeah so I brought out up and so they finally settled on that but in the meantime they never did.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Decision Processes
Environmental and Social Context	Hazard Identification
Core Perceptions	
Perceptions of Stakeholders	

Excerpt: 102, Location: 65402 - 66748

well that's what's the name of that guy you know it's a puzzle, oh ok yeah it's a puzzle that I put together and yeah. During the time of this [[company]] deal and everything I was I was really mentally going nuts and the noise and not being able to sleep. I mean when I got fifteen minutes sleep. I would be so we could well be because of the noise and the rumbling the low freq low frequency vibration and I remember one night like it was intermittent You know it would run for about five minutes and stop for thirty seconds and able to vibrate again and this just went on for months for months i tell you. And I just I couldn't find a place in my house to sleep without feeling that vibration and one night it stopped. And it was like whoa. thank god You know this

was in between what was the when COGCC didn't have the plant shut down. You know and I just fell asleep and here comes that rumbling fifteen minutes. That's all the sleep I got that night and I called [[company]] the next morning it was Sunday morning and I called um, the land manager guy and I said it's not right for you to treat human beings this way. This is not right. So then Monday they come out with their hem haw and squishing around again and we're going to try try that and so I called Jim Precupt and he come out and shut em down again. And this just goes on and on

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Alternative Actions
Core Perceptions	Perceptions of Threat
Predecisional Processes	Risk Assessment
Exposure	Action Implementation
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure

Excerpt: 103, Location: 66842 - 67992

Right they wouldn't do nothing. Then I mean you know if I talk to [[company]] they'd hem ham around they try the sound walls and they you know. Well you know the one guys I well we did the tests and there fine. You know we pass all the tests and it's you know jim precupts going we didn't get any tests we didn't get any results of their tests and how how would I trust their tests anyway. I'm mean really you know get some independent sound guys out here. and then they always wanted to test right here in the trees. Now test over here where it's echoing. You know what I found out later I could tell them where to put their tests yeah yeah I found out later that you know the landowner use like no no no this is where the noise it's over here. But they didn't know where to put it. And I think they were trying they were testing more for the semi truck noise and not their damn separators that was running twenty four seven squealing at decimals way up here that you could live with. So see I mean they're just kept trying to fill avoid everything you know they just figured their plant was running fine. They were making money. I mean.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 104, Location: 68020 - 69746

and who was I It was just me complaining I was the only complaint. You know this one kid came in here parks right in the middle of my backyard here from [[company]] to do a sound test. The facility was shut down. So how is he going to do a sound test when its not even running and so I go out there and it's like Who are you. And he goes Well some old lady across the street complained about the noise so I'm here (he said he that!) and so I just kind of let it go. You know what I mean. And that was the day I called my lawyer and I said shut it down. I've had enough of this and um So anyway so I came in called my lawyer told him what happened. You know and I said call their lawyer shut this thing down. This is it we're done. And so then I went out there and I asked for him for his business card. You know he gave it to me and I said you know this is private property. You're parking on. "Well I'd thought it was [[company]]'s overflow" and I said and you know that old lady who was complaining about the noise that was me. Then he just got all shook up the you know it's like get the hell off my land. But I mean this is the attitude [[company]] kept throwing at me the whole time. I mean how am I supposed to respond. And yet on the other side of the fence I was raised. You know to be a good person. You know to try to work with people to be patient. You know and I found out later there. I was stupid for being in that way. I really should have dove in there hard nosed with my horns in front of me. You know gouging. But I'm just not that kind of person. So. I guess I that was why it took longer than maybe other people got quicker results than me because you know I Just wasn't forceful enough. Yeah.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Decision Processes

	Perceptions of Stakeholders

Excerpt: 105, Location: 68088 - 69245

You know this one kid came in here parks right in the middle of my backyard here from [[company]] to do a sound test. The facility was shut down. So how is he going to do a sound test when its not even running and so I go out there and it's like Who are you. And he goes Well some old lady across the street complained about the noise so I'm here (he said he that!) and so I just kind of let it go. You know what I mean. And that was the day I called my lawyer and I said shut it down. I've had enough of this and um So anyway so I came in called my lawyer told him what happened. You know and I said call their lawyer shut this thing down. This is it we're done. And so then I went out there and I asked for him for his business card. You know he gave it to me and I said you know this is private property. You're parking on. "Well I'd thought it was [[company]]'s overflow" and I said and you know that old lady who was complaining about the noise that was me. Then he just got all shook up the you know it's like get the hell off my land. But I mean this is the attitude [[company]] kept throwing at me the whole time. I mean how am I supposed to respond

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Action Implementation
Environmental and Social Context	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders

Excerpt: 106, Location: 69846 - 70151

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 107, Location: 69846 - 71219

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah. What was I going to say. About his good attitude. Sorry. Brain fart. um, Oh yeah that you just get a,a you know you get a different attitude from him. You know one hundred percent for the gas wells. he was telling me that not only do we have one layer of gas oil underneath there is two more. And they haven't even hit down into the other two they haven't even touched those yet in this basin area. So yes that does scare me because if this was only the product of the first layer. What's going to happen later on down the road. Hopefully I'll be dead and gone. You know what i mean. hopefully hopefully it won't be in my lifetime. But who's to say that they want to come in and you know put a facility kind of like Anadarko did down here in the middle of [Neighbor]'s field in luppy well hell man that's that's another ticket to Hawaii for a month with his wife he wouldn't care. Would nor would he discuss it with me. How would you feel about having that here. You know but like I say it's his land to do what he wants to look at you when you're against it.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 108, Location: 69846 - 71219

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah. What was I going to say. About his good attitude. Sorry. Brain fart. um, Oh yeah that you just get a,a you know you get a different attitude from him. You know one hundred percent for the gas wells. he was telling me that not only do we have one layer of gas oil underneath there is two more. And they haven't even hit down into the other two they haven't even touched those yet in this basin area. So yes that does scare me because if this was only the product of the first layer. What's going to happen later on down the road. Hopefully I'll be dead and gone. You know what i mean.

hopefully hopefully it won't be in my lifetime. But who's to say that they want to come in and you know put a facility kind of like Anadarko did down here in the middle of [Neighbor]'s field in luppy well hell man that's that's another ticket to Hawaii for a month with his wife he wouldn't care. Would nor would he discuss it with me. How would you feel about having that here. You know but like I say it's his land to do what he wants to look at you when you're against it.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Threat
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 109, Location: 75198 - 76102

I asked Spirit send me a woman to work with i did honestly you know and I wasn't totally impressed with Wendy. But yet there was still that feminine and or you know there was that feminine or that quality in there like when she found out that these guys dump their tires and use me for a dumping that then she kind of you know started sitting you know what I'm saying. And yeah yeah. Not that you know it's hundred percent perfect but you know I just felt I don't know I said Spirit send me a woman that I can talk where the so nice. He sent me Wendy much better than I guess so. I mean you know if you very much told me she was going to squish me like a bug if i went to the media again you know but you know I have to say that you know she did help you know it did help the situation. You do maybe you do need male female interactions going on there just as well as in anything else I do know.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 110, Location: 79527 - 79767

t's. I mean living here for forty at the time forty three years and then all of the sudden this destroys I feel like it really kind of destroyed my life,, my farm. You know what I had they took so much away from me and didn't give a crap.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Place History
Risk Assessment	Perceptions of Threat
Core Perceptions	Risk Assessment
Decision Processes	Environmental and Social Context
	Core Perceptions
	Decision Processes

Excerpt: 111, Location: 79770 - 80455

Yeah) you know and then the one guy I'm Mike he goes well you get royalties don't you as if that's supposed to make up for everything. Hundred eighty seven dollars a month poorly. I mean first three months checks are coming in, You know like I got OK I got five grand on my loyalties now I know Wayne he was picking up three times as much so course exactly what. You know and of course it decreases as it goes down. Well I remember before they put this in Dad was getting forty seven dollars a month. For royalties. So it's not like I'm pulling you know a lot and I told my lawyers that it doesn't matter how much money they give me. They took so much away from me and my life.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 112, Location: 81161 - 82030

love it. I mean you know I just my dying wish is just fall face forward and kiss it goodbye. Well I mean that's my dying which don't put me in a hospital or a nursing home just let me get the land and kiss it goodbye as I go yeah it's a big love to my life and then this year just you know. But then I try to look on the bright side loopy could have put up a shooting range over there you know what I read so at least once when we get em quieted down and something it's a lot more tolerable Yes You know it is you know it's, It's doable. And not that I like it but it's. Its doable. But you can you can. Yeah yeah that makes sense took a lot of adjusting a lot of brainpower to get me. you see that puzzle there? I've got maybe fifty seventy five of them out in the shop that's all I did during this fight with [[company]] was puzzles to distracted to keep me sane

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 113, Location: 81739 - 82635

Its doable. But you can you can. Yeah yeah that makes sense took a lot of adjusting a lot of brainpower to get me. you see that puzzle there? I've got maybe fifty seventy five of them out in the shop that's all I did during this fight with [[company]] was puzzles to distracted to keep me sane. Interviewer: So are these puzzles over here too? Yeah yeah I frame em. You know I just I couldn't put him back in the box Moore's Oh I'm just going to prove to him and now the back part of the shop is all puzzles like that I would have a fit if he went back to earlier or I think oh that there. (That's a funny) instead of his tires soon I'll be honest I had I wasn't fair. Interviewer: I said I hate doing puzzles but I saw it all are to go like OK Some people say it's really really relaxing time it was good therapy because it didn't take my mind off the problems off of the situation.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Action Implementation
	Core Perceptions
	Decision Processes

Excerpt: 114, Location: 18112 - 18161

If you've got you know dirty sneaky contractors

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

INTERCODER TEST

The secondary coder for this test was a masters-level researcher who was trained to apply the PADM. They completed the test after we discussed the codings for an entire interview. Notably, the “Trainee” often coded far more codes than the original “trainer”, indicating a potential difference between coding pre-established chunks of text versus a full undemarcated interview text.

Pooled Kappa: 0.18

Table A3.4: Individual Cohen’s Kappa scores for each code. Metrics of most concern are highlighted in yellow.

Codes	Cohen's Kappa	Agree	Disagree	Difference from Intrarater K.
Place History	0.32	103	11	-0.16
Hazard Identification	0.16	90	24	-0.01
Core Perceptions	0.14	65	49	-0.1
Action Implementation	0.02	90	24	-0.23
Environmental and Social Context	0.28	74	40	-0.21
Protective Action Search	0.19	107	7	-0.39
Perceptions of Stakeholders	0.34	83	31	-0.02
Attention	-0.03	91	23	-0.01
Receiver Characteristics	0.26	93	21	-0.48
Exposure	0.07	89	25	-0.47
Predecisional Processes	0.1	88	26	-0.4
Stakeholder Characteristics	0.43	85	29	-0.03
Decision Processes	0.22	86	28	-0.04
Risk Assessment	-0.06	92	22	-0.35
Perceptions of Threat	0.06	73	41	-0.41
Alternative Action	0	82	32	-0.59

Excerpt: 1, Location: 106 - 665

It's turning into California. You know ever since they legalized marijuana oh crap. I mean you know it's a it's a catch twenty two. I mean housing has gone up. You know everything from renting to buying is just it's very hard for you know my roommate her son and son in law and daughter they're really thinking about moving to Mexico they can't afford to live here. I mean they've got both got to hold two jobs just to pay rent and it keeps going up and can't find a home to you know to be I. It's just gas food. Everything has just gone up. No breaks.

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History
Receiver Characteristics	Environmental and Social Context
Environmental and Social Context	

Excerpt: 2, Location: 1116 - 1478

es well give it another ten years cause yeah. This used to be all wheat land around here and you know I mean the seventy six corridor here You know from Brighton on out pretty soon that's going to look just like I twenty five from Denver to Fort Collins. It's just going to be nothing but you know industrial and you know commercial. Oh well progress right.

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History
Receiver Characteristics	Perceptions of Threat
Environmental and Social Context	

Excerpt: 3, Location: 1718 - 2710

I was born here. So I've lived here all my life and we made the big whopping move of what nine miles from Keansburg the Hudson. Dad was a farmer you know his whole life and um Anyway he retired and kept the dry land and bought this land here forty six years ago and built the house. So I've been here forever. (Laughing) You know seen a lot of changes and sometimes I look around and I think oh Dad you don't want to see this. I mean you know it was growing and developing during his lifetime and I think of you know his eighty five ninety years of progress that he's seen from nineteen thirteen. He was born. You know. So he's seen a lot. but you know, now with the computers and technology it would blow him away it would blow him away. Yeah and I don't know. Yeah I've seen. You know I've seen a lot of progress a lot you know I just always wonder where are all these people coming from you know? all the housing developments and everything and then where are they coming from?

Code Applications

Trainer Codes	Trainee Codes
Place History	Place History
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	

Excerpt: 4, Location: 1736 - 2003

So I've lived here all my life and we made the big whopping move of what nine miles from Keansburg the Hudson. Dad was a farmer you know his whole life and um Anyway he retired and kept the dry land and bought this land here forty six years ago and built the house.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Environmental and Social Context

Excerpt: 5, Location: 3287 - 3644

mean either you know but just listening to me it was just fascinated by the open space that we have out here and and yet I see it closing in on you know because what I was a kid teenager in my twenty's it was all farmland around here you just you know dirt roads and farmland. And now look. We've got highways. Loves truck stop. And lots of gas wells.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Perceptions of Threat
Environmental and Social Context	Attention
	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 6, Location: 4102 - 4754

its pretty much retired. OK if you know what I mean like I say Dad He retired from the major farming you know he did wheat sugar beets pinto beans corn. You know and he sold all of that in Keansburg and he just kept the dry land to keep him busy you know just to have something to do and he did that for about twenty years and then passed away and I don't know. I ended up inheriting the place. And. bfff I just try to maintain it. You know there's I just live on fifteen acres. OK you know ten acres is in thistle on the other side of the field here and I just try to keep this place going and you know I worked for AT&T for twenty five years.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History

Environmental and Social Context	Receiver Characteristics
	Environmental and Social Context

Excerpt: 7, Location: 4754 - 5551

OK and they kicked me out four months before retirement. So that saved them a penny there. Parity Yeah you know and so I had just been trying to survive since then. You know mad at the government. You know they surpassed all our work to other countries. You know. closed down and I just got the attitude. why should I go to work for them anymore? So everything is under the table that I make you know what I'm saying I mean that sounds really not American but it's you know I just figured they weren't too American with a lot of us you know in our factory work and stuff and I have a a lot of friends are still trying to get jobs here and you know they get a job for your two and it's always it's never full time. It's never permanent It's always. What you call it... temporary... Yeah you

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Stakeholder Characteristics
Environmental and Social Context	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 8, Location: 5685 - 5792

so actually you know I'm not working I'm just trying to maintain and live and survive if that makes sense.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 9, Location: 6130 - 8325

Well how they interacted with me. Was pretty shitty They didn't tell me they didn't discuss this gas development over here at all with me. Now they did with the neighbor because it was on his land. But I did have you know there was a road access Dad Dad signed a contract or he was in the process of making a contract with the gas and oil company. You know just to give him service access a road you know to a couple um well heads here in the next field. And so then he died and they came back to me you know and I figured well you know dad he was sensible he knew what he was doing so I went ahead you know signed the contract with them and you know it was just maintenance you know maybe once or twice a week to pick up would come through go down. Check the little well heads and leave and this went on for like ten years. All of sudden boom. You know there was trucks see equipment they were you know they were drilling behind Luppy's a new well. And like I say it was his property there was nothing I could say. But I'm thinking you know they never discussed anything with me zero what they were going to do what they were planning. nothing. And um in the you know they they just they did they just kind of acted like Move over old lady. We've got stuff to do here were important and you're not and so I just kind of waited and waited and watched all the construction and all the equipment come in and everything and and the drilling and I'm thinking they're not sticking to their contract because they're putting in new wells which doesn't apply to the contract of the road access. You know the roadies easement. and I just felt like if I said something at the time they would swindle out of it and change things you know and make it you know in their favor. So I waited and finally one day you know they had their little well signs you know that says you know the location of blah blah blah. They had written on permanent magic marker permanent marker the new Chavez wells. And to me that broke the contract right then and there because they never discussed it with me. They never you know offered to pay for you know an easement to more wells are you following me kinda.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Threat
Stakeholder Characteristics	Stakeholder Characteristics
Receiver Characteristics	Action Implementation
Environmental and Social Context	Environmental and Social Context
Core Perceptions	Attention
Predecisional Processes	Core Perceptions
Exposure	Predecisional Processes
	Decision Processes
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 10, Location: 7155 - 7905

But I'm thinking you know they never discussed anything with me zero what they were going to do what they were planning. nothing. And um in the you know they they just they did they just kind of acted like Move over old lady. We've got stuff to do here were important and you're not and so I just kind of waited and waited and watched all the construction and all the equipment come in and everything and and the drilling and I'm thinking they're not sticking to their contract because they're putting in new wells which doesn't apply to the contract of the road access. You know the roadies easement. and I just felt like if I said something at the time they would swindle out of it and change things you know and make it you know in their favor.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Attention
	Core Perceptions
	Predecisional Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 11, Location: 7907 - 8324

So I waited and finally one day you know they had their little well signs you know that says you know the location of blah blah blah. They had written on permanent magic marker permanent marker the new Chavez wells. And to me that broke the contract right then and there because they never discussed it with me. They never you know offered to pay for you know an easement to more wells are you following me kinda.

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Perceptions of Threat
Core Perceptions	Core Perceptions
Predecisional Processes	Decision Processes
Decision Processes	Hazard Identification
Exposure	
Hazard Identification	

Excerpt: 12, Location: 8348 - 8957

So I called my lawyer and that's when the whole thing started and they just they lied they cheated. You know they they, I land locked because they you know they had this access here to the new well that they dug and I own half of the road over here which they were utilizing to go behind Puppy's house, you know where they were drilling and they paid me a first for that you know for the easement behind the Loopy's House and I was like OK fine you know but then later on I found out that Luppi stated that he would let them do that only temporary until the well was dug and then they had to close that down.

Code Applications

Trainer Codes	Trainee Codes
Action Implementation	Stakeholder Characteristics
Decision Processes	Environmental and Social Context
	Attention
	Predecisional Processes

Excerpt: 13, Location: 8651 - 8771

you know where they were drilling and they paid me a first for that you know for the easement behind the Loopy's House

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Action Implementation
	Environmental and Social Context
	Decision Processes

Excerpt: 14, Location: 9005 - 9899

And so they consider ok we'll just use the easement over here you know on my property for all trucks and stuff without telling me without you know asking me or say oh this is what we're going to do or you know going to have to revise the contracts they didn't say nothing nothing at all. And so my lawyer and I you know I got together with my lawyer and we shut him down. You know it was like you can't cross my property anymore until this gets straightened out and then they continued to go across the property in the middle of the night. 10:46 You know instead of going all the way around and they never they just never brought up any more contracts and um, it was a year and a half of fighting with the lawyer with them and the equipment they brought in and the separators were so noisy you couldn't sleep at night. You couldn't have your windows open. It's like an amphitheater. You

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Risk Assessment
	Environmental and Social Context
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 15, Location: 7066 - 7152

Luppy's a new well. And like I say it was his property there was nothing I could say

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat
	Stakeholder Characteristics
	Environmental and Social Context
	Attention
	Core Perceptions
	Predecisional Processes

Excerpt: 16, Location: 9893 - 10291

. You know from where they're positioned you know it would come up here it would bounce across there's the shed walls and it would just magnify the sound and after a while I told my lawyer I said My ears are sore. I can't even wear earplugs anymore. You have to turn up the T.V. way loud just to drowned out there are noise and you know they and the one time you said well we had you know people

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Stakeholder Characteristics
Core Perceptions	Risk Assessment
Predecisional Processes	Environmental and Social Context
Exposure	Decision Processes

Excerpt: 17, Location: 10170 - 10659

T.V. way loud just to drowned out there are noise and you know they and the one time you said well we had you know people out here and to you know do the sound in you know the papers are in and we applied that all and I found out from COGCC. Jim precept He says he never got any papers the report isn't in yet so they just kept lying to me through the whole thing but and bottom line is you know they knew they were in the wrong. And they've they've finally kind of settled up with me.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 18, Location: 10661 - 11503

But I think if I took them to court I could have ripped them a new one to be honest with you but I just was tired of fighting Ryan. You know after a year and a half and low frequency vibration ahhhhh. My windows would rattle it was so bad we couldn't sleep. I mean you just, you know, have you ever experienced low frequency vibration? that it's like you can feel it hear it at the same time you can't really divide it you can't really divide it you can't really feel it you can't really hear it is just combined together. It's nerve wracking. It's kind of like being in a theater and you can hear the low bass vibration come in from the next theater room, You know play in their movie, It's kind of like that. yeah yeah which freaked me out when I went to see a movie a like a year later and that vibration for a bit was like oh crap.

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Protective Action Search
Exposure	Perceptions of Alternative Actions
	Perceptions of Threat
	Risk Assessment
	Core Perceptions
	Decision Processes
	Hazard Identification

Excerpt: 19, Location: 11504 - 12292

And I fought that and fought that and cog, C O G C C fought it with me and I don't know how Jim did it but you know he had some meetings with them and finally got him to get rid of the separators. And then they brought other people out to measure the low frequency vibration and you know," oh yeah it is too high" and they finally got their equipment turned down and you know it was just a battle for a year and a half with them. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass them on the on the highway and I feel like a dog with his head out the window barking at em.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat
Core Perceptions	Action Implementation
Perceptions of Stakeholders	Attention
	Core Perceptions
	Predecisional Processes

Excerpt: 20, Location: 11933 - 12196

. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 21, Location: 12196 - 12290

them on the on the highway and I feel like a dog with his head out the window barking at em.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Receiver Characteristics
Perceptions of Stakeholders	Environmental and Social Context

Excerpt: 22, Location: 12437 - 13104

And then Anadarko put in a big rig down here on the end of road forty three and oh the traffic last summer was just

unreal. You know the truckers and bringing in equipment now it's mellowed out I guess you just have to kind of put up with it and wait for them to get their facilities built and settled in and you know before it's all over with. but It's. Is just nothing but a noisy dusty dirty mess the whole time and truckers you know they get used to the route and they don't care they don't care how fast they go or you know just no respect to the people around you know they'll drive sixty miles an hour down the dirt road and, i don't know. I got an attitude

Code Applications

Trainer Codes	Trainee Codes
Environmental and Social Context	Perceptions of Threat
Predecisional Processes	Core Perceptions
Exposure	Decision Processes
	Hazard Identification

Excerpt: 23, Location: 12854 - 13105

and truckers you know they get used to the route and they don't care they don't care how fast they go or you know just no respect to the people around you know they'll drive sixty miles an hour down the dirt road and, i don't know. I got an attitude

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Threat
Perceptions of Stakeholders	Risk Assessment
	Attention
	Core Perceptions
	Decision Processes

Excerpt: 24, Location: 13943 - 14835

You know it took several years to you know and now I'm trying to get plants growing along the fence line you know to eventually grow up hide that. You know but they took my whole view away from the mountains. You know what I mean it's kinda and they where their tanks are like I always thought of developing that ten acres. You know divided into thirds you know but the first third now your vision West is tanks. You know and I said you ruined my property value, "but property value is high now." and blah blah blah and I'm going Yeah but not with tanks sitting right in front of ya. You know that doesn't help the property value at all. You know. So you know couldn't argue that point with. I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week.

Code Applications

Trainer Codes	Trainee Codes
Place History	Perceptions of Threat
Receiver Characteristics	Risk Assessment
Environmental and Social Context	Action Implementation
	Core Perceptions
	Decision Processes

Excerpt: 25, Location: 14643 - 14911

I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week. Interviewer: And you said you got them to downsize. Yeah yeah me cogcc.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 26, Location: 14913 - 15462

Interviewer: I'd love to come back to talking about your your interactions with COGCC because you do see through interesting to me but I wanted to also are so what is the primary method by which you learn about these sites you have this one here here how do you. Visual just by watching them. Seeing what they're doing seeing how they affect me. I guess you know sometimes I look up on the Internet. The companies and what they are and how big they are and you know I just had a little you know Encana gas and oil is the one who did this one.

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Protective Action Search
Exposure	Attention
	Decision Processes
	Hazard Identification

Excerpt: 27, Location: 15413 - 15818

Encana gas and oil is the one who did this one. So they're just little guys so to say but I think they were the shittiest ones of all. Seems like the bigger guys have more respect but I think two the more land you have the more respect you're going to get from. You know if you're just a little small fry with fifteen acres I feel like they kind of give you a different attitude like you ain't nobody.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Threat
Perceptions of Stakeholders	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 28, Location: 15679 - 15741

You know if you're just a little small fry with fifteen acres

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 29, Location: 15894 - 16491

Not really no um my one roommate she she interacted with Anadarko down here because of the speed of the trucks and everything and she says I've got grandchildren that play around here and stuff and she says you guys just speed up and down this road it's ridiculous. So they kind of worked with her a little bit you know but their speed limit sign is in their facility. Slow. Fifteen miles an hour. It's not you know directed to the road and I know they're legally there's no speed limit but, you know they tell their drivers to slow down and that's up to the drivers. You know they're attitude

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Risk Assessment
Core Perceptions	Environmental and Social Context
Perceptions of Stakeholders	Decision Processes

Excerpt: 30, Location: 17703 - 18360

No that's basically i just sit my interactions with you know Encana themselves and their contractors. I told them one day one contractors they came in to resurface. I mean to take out the road you know and redo my land they dumped a bunch of tires on my property. Yeah I mean just junked em out there and you know I told them about that and i says you know I said, "Birds of a feather flock together". If you've got you know dirty sneaky contractors What does that make your company look like? if these are the contractors you hire you know you look the same way. You're not going to hire any honest contractors and how does that make make you look

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat

	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 31, Location: 18494 - 19957

Like well like I say the ones that came out here to redo my land. You know while they were doing it. They broke tree branches. They just had no respect the dirt they dumped was full of chunks of cement. Now that it isn't topsoil. You know in my book. Of course they dumped their tires and they took them back. I didn't say a word to them about their tires what I had to do, I had like forty old tires. You know tractor truck tires blah blah blah. And they kept using my access here and I tried to block it with branches and stuff like that they just ran right over them and continued using the road to the facility. So I got those tires and I piled them up on both ends. You know, to block em you're not coming through my property. You know. And so when they came in to redo the field they saw the pile of tires there that they moved off to the side. So they threw their tires in there with it and my brother and I you know we were out walking around and Brian goes. These aren't your tires. You know you recognize them a semi truck tires and sure enough you know they you know so I put my tires back and left there's sitting out in the middle of everything and they took them. I didn't say a word to him. I did too Encana but they took them. So but I just thought you sneaky bastards what the hell. I mean you know these tires weighed three times more than I did. How am I going to move them around and get rid of them and dispose of them?

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Perceptions of Alternative Actions
Exposure	Perceptions of Threat
	Action Implementation
	Core Perceptions
	Decision Processes
	Hazard Identification

Excerpt: 32, Location: 18494 - 19176

Like well like I say the ones that came out here to redo my land. You know while they were doing it. They broke tree branches. They just had no respect the dirt they dumped was full of chunks of cement. Now that it isn't topsoil. You know in my book. Of course they dumped their tires and they took them back. I didn't say a word to them about their tires what I had to do, I had like forty old tires. You know tractor truck tires blah blah blah. And they kept using my access here and I tried to block it with branches and stuff like that they just ran right over them and continued using the road to the facility. So I got those tires and I piled them up on both ends.

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Place History
Action Implementation	Action Implementation
Decision Processes	Environmental and Social Context
Hazard Identification	Decision Processes
	Hazard Identification

Excerpt: 33, Location: 19358 - 19609

So they threw their tires in there with it and my brother and I you know we were out walking around and Brian goes. These aren't your tires. You know you recognize them a semi truck tires and sure enough you know they you know so I put my tires bac

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Perceptions of Threat
Exposure	Stakeholder Characteristics
	Environmental and Social Context
	Attention
	Core Perceptions
	Predecisional Processes

Excerpt: 34, Location: 20032 - 20265

When they were building the facility they would park on my side with the fence you know like if somebody would come

over and visit their honey for lunch or something. They used my land as a parking lot. I thought that's pretty rude

Code Applications

Trainer Codes	Trainee Codes
Risk Assessment	Perceptions of Threat
Predecisional Processes	Core Perceptions
Decision Processes	Predecisional Processes
Exposure	Decision Processes
	Exposure
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 35, Location: 19689 - 19754

I didn't say a word to him. I did too Encana but they took them.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Action Implementation	Environmental and Social Context
Environmental and Social Context	
Decision Processes	

Excerpt: 36, Location: 20400 - 21898

Yes. Yeah yeah but to me it's all one and the same you know what I mean I had an auction here and we were getting ready for it. And like it was on Thursday. And we were setting up because it was going to be open to the public on Friday so that they could come in and see what to bid on for Saturday. So a couple of the workers you know came over and they wanted to see you know the stuff and I go it's not open to the public until tomorrow we're busy out here setting up and he got pissy with me and he's like well who are you. I want to come look and I'm thinking well shouldn't you be over there? Workin? Aren't you supposed to be working? and he just really had a bad attitude and you know it's just like I'm not going to have them go around and look at the place when we're you know busy working and who knows what they're going to end up taking I mean you just don't do that but he just felt like he had the right to come over here and and you know and I said no and and he didn't like that. So I just I just didn't get it. you know I hate to put in the fact you know of you know I'm a woman, you know ,and they're but you can't help feeling that way. You just really can't. I'm sure you know if my my bro would stood there and told them No it's not open to the public today he would have gotten more respect. And you know this is kind of what I was fighting too was like I say I just I just hate that you know. This is you know Man Woman deal that, It was definitely evident that

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Receiver Characteristics	Receiver Characteristics
Environmental and Social Context	Environmental and Social Context
	Core Perceptions

Excerpt: 37, Location: 21114 - 21898

I'm not going to have them go around and look at the place when we're you know busy working and who knows what they're going to end up taking I mean you just don't do that but he just felt like he had the right to come over here and and you know and I said no and and he didn't like that. So I just I just didn't get it. you know I hate to put in the fact you know of you know I'm a woman, you know ,and they're but you can't help feeling that way. You just really can't. I'm sure you know if my my bro would stood there and told them No it's not open to the public today he would have gotten more respect. And you know this is kind of what I was fighting too was like I say I just I just hate that you know. This is you know Man Woman deal that, It was definitely evident that

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Core Perceptions
Core Perceptions	Decision Processes
Perceptions of Stakeholders	Hazard Identification

Excerpt: 38, Location: 22560 - 22702

Well yeah they made improvements along the way but it was a real fight so you know they just couldn't seem to understand why I was so upset.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Core Perceptions
Core Perceptions	Perceptions of Stakeholders

Excerpt: 39, Location: 23005 - 24369

Well I kind of started out with their land managers you know two young guy. And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know. And I told him they were my trees of had grown so instead of the road being straight down along the trees course their spreading out like this which was taking more of my land you know and I showed ryan his name was ryan too. And I showed Ryan that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean. And there was excuses like that through the whole process. Well what is this vibration ryan well I don't know. And I just know when he drove out on the road he wouldn't think twice about it. And. And then they said OK well we'll put up sound walls so they put in the sound walls we're going to pay an extra thousand dollars for the road easement you know to put in the sound walls never saw that and um they put in the sound walls but the thing was was that it was like a box that was opened on top and the noise was still coming out it didn't reduce the noise at all. zero. You know so complained again and they come out and and I just finally, I don't know exactly how it worked,

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Place History
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
Core Perceptions	Risk Assessment
	Environmental and Social Context
	Decision Processes
	Hazard Identification

Excerpt: 40, Location: 23082 - 23284

And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know.

Code Applications

Trainer Codes	Trainee Codes
Action Implementation	Protective Action Search
Decision Processes	Stakeholder Characteristics
	Attention
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 41, Location: 24370 - 24703

You know but you know somebody could said you know to call COGCC and file a complaint and then that's where I really started getting help. Well my lawyer told me. Duh. Yeah my lawyer told me to contact COGCC. File a complaint and THEN they started acting moreso once when COGCC got in on it then they started a different behavior.

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Protective Action Search
Decision Processes	Perceptions of Alternative Actions
	Stakeholder Characteristics
	Environmental and Social Context

	Core Perceptions
	Decision Processes

Excerpt: 42, Location: 24424 - 24509

call COGCC and file a complaint and then that's where I really started getting help.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Action Implementation
Core Perceptions	Core Perceptions
	Decision Processes

Excerpt: 43, Location: 24510 - 24583

Well my lawyer told me. Duh. Yeah my lawyer told me to contact COGCC. F

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Stakeholder Characteristics
Decision Processes	Receiver Characteristics
	Environmental and Social Context

Excerpt: 44, Location: 24581 - 24703

File a complaint and THEN they started acting moreso once when COGCC got in on it then they started a different behavior.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Action Implementation
Core Perceptions	Decision Processes

Excerpt: 45, Location: 24744 - 25896

. To the noise to the vibrations to the contract, well the contracts they had to you know apply through my lawyer because they knew that they were wrong there. You know. And basically all I wanted was them to fix the noise get rid of the vibrations and get the hell off my land. You know which meant that they had to go around to the neighbors and find other accesses because they couldn't on this side they couldn't on that road because I wouldn't give them permission over there. You know even if Lupy gave them permission I still owned half the road. So they couldn't. So I basically had him land locked there for a while and everything was shut down the facility was like non operational and I know that pissed them off. And I loved it. I'm sorry but hahahaha And then they;d fire it up again you know I'd call my lawyer my lawyer would contact them shut it down again you know until they got things fixed but they. Just for, for months they wouldn't fix anything. And they'd started up again and try to act like normal and it's like this isn't going to work you guys you know you're just I just such a long process such a nightmare.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat
	Action Implementation
	Core Perceptions
	Predecisional Processes
	Exposure

Excerpt: 46, Location: 24540 - 24581

Yeah my lawyer told me to contact COGCC.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 47, Location: 26057 - 26789

Basically I did all the communications My lawyer coached me. OK so to say now I found out later that Encana's policy is that once they are contacted by somebody's lawyer it's the lawyers all the way. You know there isn't any other interaction. Well I can afford that. Here you know what I'm saying and and I really didn't realize it to be honest with you. You know and with the coaching of my lawyer you know to write the letters and I wrote letters to just about everyone at Encana including Channel 9 News COGCC. And I just sent it out to everybody. Shit that's what a public relations Windy Wheaton-burger when the Wendy Widenmeyer that's when she contacted me and from Encana and then we started getting things rolling.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Stakeholder Characteristics
	Action Implementation
	Environmental and Social Context
	Core Perceptions
	Decision Processes

Excerpt: 48, Location: 26737 - 27154

Encana and then we started getting things rolling. But she also kind of let me know that contacting the news was a real no no. You know that they would fight that or whatever and I said hey you backed me up against the wall. What else am I going to do and how did she know you contacted news? because it was because on the e-mail it showed who I sent it all to. So they knew everybody else that it was sent to.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Action Implementation
	Environmental and Social Context

Excerpt: 49, Location: 27198 - 27793

To Them they didn't want any publicity. Of course, you know why would they want to be on the news with an irate farmer you know with them trespassing against their will. You know they want to kind of publicity. And. She very much kind of put it I couldn't tell you how eloquently she phrased it, but pretty much she says you know if you continue this with the news we will squash you like a bug. And I told my lawyer that I says I couldn't tell you exactly how she said it but that was the vibrations that came through you know if I continued to do that they'd try to squash me like a bug.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Perceptions of Threat
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 50, Location: 27796 - 29704

Interviewer: But Wendy is she your primary person you talk to at encana (yea) you know and how often do you engage with her after that was a one time occurrence was it Every couple weeks at least once a month and they'd come out and we'd have meetings of what they could do with the facility to downsize it to make it better to make visuals better. You know they did you know did try to work with me there but there are they had a lot of influence between my lawyer and C O G C C too they were pushed up against the wall so to say you know they needed to start complying and which they did I have to admit you know but it was a battle, It was a fight and then you know they brought out the other. You know like the had putting in the machinery. You know those, those guys you know they would bring in a couple of them and would discuss what they could do and you know like what it would cost to put in trees. You know for the, To hide. You know. Yeah. And just stuff like that but you know but they offered to pay me to put in the trees and my brothers going Well when his dad dealt with the gas companies you know they would go ahead and do all that you know they'd get the trees bring them in and plant but Encana says no we don't do that. And you know it's like OK fine whatever. I don't. Hell I mean I didn't know how all the gas wells worked and stuff and you know my Dad

had, we didn't really have any anything you know in our farms as far as that went. So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about it so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
	Environmental and Social Context
	Attention
	Predecisional Processes
	Exposure
	Hazard Identification

Excerpt: 51, Location: 29270 - 29704

So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about it so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Stakeholder Characteristics
Core Perceptions	Receiver Characteristics
Predecisional Processes	Environmental and Social Context
Exposure	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 52, Location: 29946 - 30058

Well I think the benefits was those that owned a lotta land and they got you know buku bucks off of royalties.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Alternative Actions
Core Perceptions	

Excerpt: 53, Location: 30158 - 30661

ey the roads getting pretty dusty You need to water it down you know this is eroding and you need to fix that you know they would come in and take care of it right away and that was more like bigger companies like mobile. And you know. Um, Anadarko. they had they're pretty good. I have to say you know if you give a complaint at least they look into it. They don't ignore you. You know till you call In Your lawyer and C O G C C and then well maybe we oughta do something about it because you know

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Core Perceptions
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 54, Location: 30710 - 30913

Yeah I mean you know they're pretty good about you know trying to take care of complaints. Yeah but Encana they just didn't seem to don't wanna. You know. I don't know how they interacted with lupy.

Code Applications

Trainer Codes	Trainee Codes

Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 55, Location: 30915 - 31432

I have no idea lupy never came over and talked to me about you know the development in this is what's going on but I had No idea what the hell was going on all that I saw I was them building this facility over here and the only thing I could tell myself was it's not your land you can't say anything. I kept thinking well it's better than loopy putting up a shooting, haha yeah a practice shooting place. Yeah bang bang bang all day long of so you know I have to thank my lucky stars the look on the bright side.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Alternative Actions
Perceptions of Stakeholders	Attention
	Core Perceptions
	Predecisional Processes
	Exposure

Excerpt: 56, Location: 31435 - 32242

interviewer: Gosh. Could you tell me a little bit about your interactions with Anadarko. Oh well I didn't really have any just what you know what my roommate did you know about the fast trucks you know and her grand kids here and everything and you know they pretty much you know like I said they got on it and told their drivers to slow down. You know it was up to the drivers if they would or not you know what I'm saying you know but I have to say that. Yeah you know they did you know try to work with it and keep the road dust down and you know stuff like that. So, I really don't have any complaints against them. You know I mean I understand that they were developing that that there was going to be a lot of traffic and everything and you just kind of had to put up with it. It's progress.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Place History
Perceptions of Stakeholders	Perceptions of Threat
	Perceptions of Stakeholders

Excerpt: 57, Location: 32375 - 33654

My only guess is isn't Anadarko from Texas? I don't know they were developing. I mean their main main company is Texas. American. OK USA Encana is Canada. They're from Canada. And I Well alright. This kind of goes back to me working with AT&T. You know we were AT&T and then we spun over to Alluscent and Abuya . And then they sold out to Celeste. And Celeste you know was a Canadian company. And man they changed that factory I worked there for one month and I said I'm outta here. I'm quitting and I literally did quit after twenty I mean I already lost my retirement from Avia you know from that was where our cutoff was so if you wanted to continue working with Celestica in the factory, you know that was your choice but I mean man they took us twenty years back all the progress we had made in twenty years at the factory. You know I just thought I can't go backwards. You know so that was an attitude against a Canadian company in the first place. OK (OK)So then here comes Encana when their attitude with me on this gas company in that in helping any and I just think because they were a United States company they felt like maybe they can get away with more. They had more tax breaks they had more I don't know I I really couldn't tell you what it was.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Threat
Perceptions of Stakeholders	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 58, Location: 33944 - 34688

learned they were crooks and to never trust them again. I'm sorry to say I learned if you're a small fry you're going to go through hell trying to prove to them that they're wrong or there are you know not doing something correctly, or you know, something's amiss. You know compared to their attitude of we're not doing anything wrong. We're fine. What's your problem type attitude. Did you ever feel like there was the chance for them to learn from you? Conversely. You would think they would. But I

don't think so. I think they just kept on doing business the same way I heard they were up for sale that Encana wanted to you know sell out but I don't know if of course it hasn't happened because you know I still get their royalties.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 59, Location: 33943 - 34000

I learned they were crooks and to never trust them again.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 60, Location: 34018 - 34101

I learned if you're a small fry you're going to go through hell trying to prove to

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Perceptions of Threat
Environmental and Social Context	Risk Assessment
	Core Perceptions

Excerpt: 61, Location: 34739 - 35625

No no this is when Dad bought this land here the fifteen acres he bought the mineral rights with it (okay). Yeah. Interviewer: So it's not split. It's. Some some of the in between here and split. So you have the land is different than minerals right? Yeah yeah see like like Lupi now when he bought the land he didn't buy any mineral rights. You know he's got twice the properties he's got thirty acres I've got fifteen. But he didn't buy the mineral rights so the mineral rights still goes over to Dave who who owned the land in the first place. Dad talked into buying the mineral rights. You know dad was smart. So loopy basically he just got paid for surface um access. Yeah yeah he doesn't get any monthly royalties or anything. I get like what three percent. I mean you know my check is one hundred eighty dollars a month. Don't spend it all at one place.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Place History
Environmental and Social Context	Stakeholder Characteristics
	Environmental and Social Context

Excerpt: 62, Location: 35807 - 37115

Do you did your interactions with them change your perspectives on oil and gas development in general? Definitely. Definitely. You know everybody seemed to be pretty cool when we had when they did have the access. You know to those to the smaller wells over here and like I say there was a worker once twice a week and you know little pickup you know and you know everything was fine... until they decided to drill and put in a bigger well and screw things up. So yeah I just things kinda started out good and then really soured after they put in the well. Well I just kind of torqued me off that you know I mean I have semi trucks driving right by our bedroom windows at three in the morning. You know they they they the way they designed the facility to fill the trucks the trucks are pointed with their headlights right at the house. Three in the morning. You've got lights shining in your bedroom window in the kitchen. Ah! No respect! And And the noise and you know they're there when that well first opened up hell you know I kept track of how many trucks would come in and what time and sometimes there was twelve tankers a day. In twenty four hours. in a twenty four hour period. I mean there was just my peace and quiet that I had enjoyed here for forty years was gone. ah but there.

Code Applications

Trainer Codes	Trainee Codes
Decision Processes	Perceptions of Threat
Hazard Identification	Risk Assessment
	Attention

	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 63, Location: 36509 - 37009

You know they they they the way they designed the facility to fill the trucks the trucks are pointed with their headlights right at the house. Three in the morning. You've got lights shining in your bedroom window in the kitchen. Ah! No respect! And And the noise and you know they're there when that well first opened up hell you know I kept track of how many trucks would come in and what time and sometimes there was twelve tankers a day. In twenty four hours. in a twenty four hour period.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Risk Assessment
Core Perceptions	Attention
Predecisional Processes	Predecisional Processes
Exposure	Exposure

Excerpt: 64, Location: 37009 - 37115

I mean there was just my peace and quiet that I had enjoyed here for forty years was gone. ah but there.

Code Applications

Trainer Codes	Trainee Codes
	Hazard Identification

Excerpt: 65, Location: 37322 - 38130

Yeah they did they rearranged it so that the trucks would be you know parked you know facing north. So the lights would you know shine out that way but eventually I got the You know so where nobody came in and out after eight o'clock at night you know I said this isn't right. You know to have you know tankers come in at one and four o'clock in the morning and so one of the stipulations was they could only come in during daylight hours. So that was cool. I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know go ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Alternative Actions
	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions

Excerpt: 66, Location: 37785 - 38365

I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know go ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor. You know what I'm saying and because I know they had a business, and, you know. So I was trying to meet him in the middle. But they they, they weren't meeting me in the middle of this and this was I mean even the the lights thing

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
	Environmental and Social Context
	Hazard Identification

Excerpt: 67, Location: 38473 - 39598

This was before. Yeah this. This was before when they opened it up and you know all of this was going on and then like I say I really felt like I couldn't say anything until I got them legally. (OKAY) You know which was marking the sign out there with the new wells on there which broke the contract because I did not contract new wells with them. But I felt like I couldn't say anything until then because they would've worked around it some way. You know what I mean and screwed me. And then I would have these trucks going back and forth right here on the other side of my trees forever. And I asked my roommate we were sitting out there one morning and here come two tankers through there and I go barb, You really want to live with this? and she said, "hell no". And i said neither do I this is not right. You know like I said they never discussed this with me they never told me this is what was going to be happening. Things were going to get busy. They were going to put a new well. And you well they were going to put in a facility they were going to use my road to do it all on. But he said nothing.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Stakeholder Characteristics
	Environmental and Social Context
	Core Perceptions
	Decision Processes
	Hazard Identification

Excerpt: 68, Location: 39296 - 39597

you know like I said they never discussed this with me they never told me this is what was going to be happening. Things were going to get busy. They were going to put a new well. And you well they were going to put in a facility they were going to use my road to do it all on. But he said nothing.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 69, Location: 39630 - 39676

Nothing Nothing. (Seems weird). Not a word.

Code Applications

Trainer Codes	Trainee Codes
	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 70, Location: 40400 - 41131

They're my heroes. they are there on top. they're my heroes jim precupt worked with me and he came out one time and you know I go, " Jim is this noise right. This can't be right." You know and. They think you know pretty good little hassle with encana themselves. You know but they were definitely on my side. You know and told him to get inspectors out and get people out to measure the noise the low frequency vibrations and there the guy said you know help me. Other than that I think I just would have gotten run over totally you know. I would have been in debt with the lawyer trying to fight him if it wasn't for COGCC. That's the a way I kind of see it. So you know between my lawyers and cogcc. They were my heroes

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Stakeholder Characteristics
Perceptions of Stakeholders	Action Implementation
	Environmental and Social Context
	Decision Processes

Excerpt: 71, Location: 40400 - 41067

They're my heroes. they are there on top. they're my heroes jim precupt worked with me and he came out one time and you know I go, " Jim is this noise right. This can't be right." You know and. They think you know pretty good little hassle with encana themselves. You know but they were definitely on my side. You know and told him to get inspectors out and get people out to measure the noise the low frequency vibrations and there the guy said you know help me. Other than that I think I just would have gotten run over totally you know. I would have been in debt with the lawyer trying to fight him if it wasn't for COGCC. That's the a way I kind of see it.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Stakeholder Characteristics
Stakeholder Characteristics	Environmental and Social Context
Environmental and Social Context	Attention
Core Perceptions	Predecisional Processes
	Exposure

Excerpt: 72, Location: 41196 - 41558

Yeah you know it's kind of funny because right after all of this happened a guy will go over to the eastern and western slope or something. He wasn't representative around here anymore and it's kind of wondered about that maybe he was just darn good and they needed him over there. You know what I mean I don't know but it was like oh no! Don't take him away!

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	
Perceptions of Stakeholders	

Excerpt: 73, Location: 42189 - 42600

And they have pretty much complied. You know maybe once or twice there is a tanker that came in after hours but, You know why, you know get on the phone(whining noise) every time I mean for God's sakes. I want to get on with my life to you know what I mean and so they would be you know they have maintained it . I have to say that they've complied. But it was just hell trying to get them to that point.

Code Applications

Trainer Codes	Trainee Codes
Attention	Action Implementation
Predecisional Processes	Core Perceptions
	Decision Processes
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 74, Location: 42680 - 43353

Several times he came out. Yeah yeah he would come out. Well you know you put in a complaint and they don't really necessarily come out and talk to the person they go to the facility itself, ok you know and look at it, and you know like it was those was such a nightmare and all i did was watch the windows and you know and I saw him go out there after I called him. And he shut them down right then and there. He shut the facility down. That was you know shut it down. And. The battle was on
Interviewer: Do you know if there was anything in particular that caused them to shut it down?The noise. Yeah. No it was way above their specs or whatever you call it.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Threat
Stakeholder Characteristics	Action Implementation
Environmental and Social Context	Attention
Core Perceptions	Core Perceptions
	Predecisional Processes
	Decision Processes
	Exposure
	Hazard Identification

Excerpt: 75, Location: 42778 - 42931

they don't really necessarily come out and talk to the person they go to the facility itself, ok you know and look at it, and you know like it was those

Code Applications

Trainer Codes	Trainee Codes

Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	

Excerpt: 76, Location: 42957 - 43179

all i did was watch the windows and you know and I saw him go out there after I called him. And he shut them down right then and there. He shut the facility down. That was you know shut it down. And. The battle was on

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Action Implementation
Core Perceptions	Attention
	Predecisional Processes
	Exposure

Excerpt: 77, Location: 43277 - 43353

The noise. Yeah. No it was way above their specs or whatever you call it.

Code Applications

Trainer Codes	Trainee Codes
	Risk Assessment

Excerpt: 78, Location: 43496 - 44468

well You know from him as well there wasn't really any contact there at the time except they shut it down and I had like a week of peace and then they started up again and separators me and you know I mean you could probably hear him over in Hudson and I'm call them again. And Jim would come out and shut him down again and this went on about three or four times and then they started having meetings with Encana COGCC and Encana of what they can do to improve this because I just kept kept calling and kept complaining. You know my house is rattling the shop was rattling my windows I couldn't sleep because of the vibration and the noise. You know. And so it was just a battle just a tennis match back and forth between you know Encana and so I don't know somehow. um, well I was I was working that day and barb called me and she said Jim came out today. Don't you start (Talking to ca). And Jim came out and he said he, He said, there won't be any more noise..

Code Applications

Trainer Codes	Trainee Codes
Predecisional Processes	Perceptions of Threat
Exposure	Stakeholder Characteristics
	Risk Assessment
	Environmental and Social Context
	Hazard Identification

Excerpt: 79, Location: 44269 - 44473

um, well I was I was working that day and barb called me and she said Jim came out today. Don't you start (Talking to ca). And Jim came out and he said he, He said, there won't be any more noise.....

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Stakeholder Characteristics
Stakeholder Characteristics	Environmental and Social Context
Environmental and Social Context	
Core Perceptions	

Excerpt: 80, Location: 44665 - 45301

But no he came to the house and I wish I would have been here I would have hugged him so hard you know. But anyway he won when he went to that last meeting with Encana about he said he applied smoke and mirrors or whatever that meant and convinced them to get rid separators and there went the noise. Yeah. And so the next week I sat under the deck out there and just watched em dismantle the equipment and haul it out. I set my lawyer pictures of it all on trucks you know by bye! God I was so happy I was so happy but somehow he convinced them that they could continue their process of the gas and oil without the noisy separators

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Stakeholder Characteristics
Core Perceptions	Receiver Characteristics
	Action Implementation
	Core Perceptions
	Decision Processes

Excerpt: 81, Location: 45521 - 45892

They're there to help take care of a small fries and big fries too. And thank God they are. you know I think they're doing their job and they're really respecting you know they're trying to show respect in and you complain and they're on it. I mean I just always got really good positive feedback from them. And results. and you know like I say thank God for C O G C C.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 82, Location: 46540 - 46702

Um Well they were still crooks. That's never gonna change you know even COG.C.C. had a fight with them so to say so, um I can't say it changed it for the better.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Threat
Perceptions of Stakeholders	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 83, Location: 46703 - 47130

I mean like I say I mean COGCC They're on the top they're my heroes so that perspective changed in you know respect for them you know and what they're trying to do for the state you know and you know with the oil companies and you know I know they're they're they're trying and you know work broke both ways. But what I liked is when they came in and saw something wrong they shut it down. And that's the way it ought to be.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

Excerpt: 84, Location: 47098 - 47744

d that's the way it ought to be.. You know instead of you know wish washing around in our well OK you say I'll fix it next week. OK. So you know I'll talk to you in a month. You know they're there they're just like right on it. So I guess they have pretty good interactions or try to you know with the oil companies from what I saw you know what they're talkings with Encana and everything. But I wasn't at the meetings. You know wasn't the fly on the wall so I really don't know if it got heated or if they were you know you know compliant with each other or what. What it looked like on the inside I had said Yeah yeah I had no idea.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Threat
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 85, Location: 46540 - 47744

Um Well they were still crooks. That's never gonna change you know even COG.C.C. had a fight with them so to say so, um I can't say it changed it for the better. I mean like I say I mean COGCC They're on the top they're my heroes so that

perspective changed in you know respect for them you know and what they're trying to do for the state you know and you know with the oil companies and you know I know they're they're trying and you know work broke both ways. But what I liked is when they came in and saw something wrong they shut it down. And that's the way it ought to be.. You know instead of you know wish washing around in our well OK you say I'll fix it next week. OK. So you know I'll talk to you in a month. You know they're there they're just like right on it. So I guess they have pretty good interactions or try to you know with the oil companies from what I saw you know what they're talking with Encana and everything. But I wasn't at the meetings. You know wasn't the fly on the wall so I really don't know if it got heated or if they were you know you know compliant with each other or what. What it looked like on the inside I had said Yeah yeah I had no idea.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 86, Location: 47918 - 48590

Interviewer: anything. You know that you learned about oil and gas development that you learned about the companies that you learned about your rights as a citizen could be any number of those things.) Yeah well I learned that I do have rights and they they they will help support your rights you know they won't blow you off. I just I think I just learned that you know you've been eventually there's people you can turn to for help. because there for awhile I didn't know who to turn to I you know I mean by then oil and gas company. You know it was kind of like you know those little ant down here and this big hill up there and you're never going to get over it

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Threat
	Stakeholder Characteristics
	Risk Assessment
	Perceptions of Stakeholders

Excerpt: 87, Location: 48592 - 48982

Interviewer: and you said you're the lawyer initially set you on the contacting the COGCC Yeah. Interviewer: I just had a curiosity. Prior to that. Did you have any awareness that C O D C existed or do you know have you heard of them?not really I mean you know you might have heard of them but you never really thought about it until you were involved. yeah You know. Yeah. Yeah

Code Applications

Trainer Codes	Trainee Codes
Attention	Protective Action Search
Predecisional Processes	

Excerpt: 88, Location: 49369 - 49831

no but I know that if something goes haywire. You know if they bring in the separators again or start with the noise I know I can call them. you know yeah I go yeah I got somebody I can depend on and I can probably call them without even a going to a lawyer. Now you know what I'm saying and that. Yeah you don't necessarily have to get a lawyer to go to them call them and say hey these guys are making a lot of noise over here and then they'll come out and.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Alternative Actions
	Core Perceptions

Excerpt: 89, Location: 49957 - 50268

I know I just I've never had a lawyer in my life you know what I saying and so this was all of a whole new program for me. You know I know people who call a lawyer every other week and you know just to stay away from all of that you know i just want a happy life. Leave me alone. i don't want to hurt nobody.

Code Applications

Trainer Codes	Trainee Codes

Core Perceptions	Receiver Characteristics
Perceptions of Stakeholders	Environmental and Social Context

Excerpt: 90, Location: 50563 - 51450

well like when I wrote that one letter to Encana you know it was also emailed to C O D C C. Besides Channel Nine and all the other reps of, I don't know I just picked names off of the Encana's web you know I just picked. Yeah I just took their you know Internet addresses and sent it to all of em man. So yeah and there and there is a couple times em Well Jim never really got back with me a whole lot. You know what I mean or I'd send him in you know I call him you know and I just figured he was busy. Of course you know how this wasn't the only gas well around here. Yeah but when he did get in contact with me he got things done. You know but sometimes it'd be a couple weeks. (OK) yeah. And I was trying to be patient. I guess somebody else would been on and on the phone twelve hours I haven't heard from you know what's going on. You know but I would try to be patient

Code Applications

Trainer Codes	Trainee Codes
Protective Action Search	Action Implementation
Decision Processes	Decision Processes

Excerpt: 91, Location: 51453 - 52269

interviewer: but it wasn't usually instantaneous you know correct. Yeah. Yeah. Interviewer: Do you could you give me a rough numbers estimate as far as you know how many times it was that you called C O G C C or whether it was six seven times I'd have to say. Interviewer: Did they respond back to you each one of those times it just took some time or were there times where you had to call multiple times or they pretty much responded every time. (OK) yeah. you know I always figure probably with meetings between the company and them and stuff you know it'd take time to work things out. But in the meantime they just kept those facilities running no matter what if it shook my house or not, you know, until you know somebody really tromped down on him. They weren't going to shut it down. Period.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Alternative Actions
Environmental and Social Context	Stakeholder Characteristics
	Risk Assessment
	Action Implementation
	Hazard Identification

Excerpt: 92, Location: 53091 - 53495

I was in the middle because you know like I said I heard things from both sides but until your your put you know on the batter's mound to bat with the people they knew you know and then you got your opinions whether they're good or bad and how well the company works with you. Yeah I was kind of in the middle when they first did that ease access. You know to the chapman wells everything was fine. Yo

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Stakeholder Characteristics

Excerpt: 93, Location: 53440 - 53988

You know to the chapman wells everything was fine. You know we were all happy. We were working well together. And also that was, um, American resources. I believe was the name of the company. I have to look at the papers but then they changed over to Encana and they sold out and Encana bought em. So there was a difference of owners there too. Whereas American resources was much more compliant easier to work with a company Encana came in with the attitude of we're going to do what want to do it here and the hell with you little lady

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Alternative Actions
Perceptions of Stakeholders	Perceptions of Threat
	Perceptions of Stakeholders

Excerpt: 94, Location: 53578 - 53864

American resources. I believe was the name of the company. I have to look at the papers but then they changed over to Encana and they sold out and Encana bought em. So there was a difference of owners there too. Whereas American resources was much more compliant easier to work with

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Environmental and Social Context

Excerpt: 95, Location: 54156 - 54292

you get good and bad some love them to death and you know they work well and there's others like me that growl at every truck that goes.

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Receiver Characteristics
Perceptions of Stakeholders	Environmental and Social Context

Excerpt: 96, Location: 54524 - 55718

Oh my God it's over fifty two was you know that used to be a pleasant road to drive to ft Lupton now you got to drive defensively all the way there and back and I mean I've I have see these truckers do some of the stupidest damn things on that road. You know like they pass on a double line on a hill. It's kind of like they're not abiding by any of the road laws and yeah I just see stupid crap like to had you never seen it before. Interviewer: It's all new so this. Yeah so that's kind of changed and they have an attitude like move over. You know or one time I was turning on of my road here off with fifty two. Of course you know I'm slowing down gotta blinker on their strappy coming from the other way. Usually I try to pull over. You know like a turn off lane. You know which rural areas don't have that right. You know they kind of need to remember that this was farm country at one time you know but now they drive like it's a city. You know like it's I-25. But anyway I look in my rearview mirror and all I see is a big cloud of white brake smoke and tire smoke. This guy was hollering ass and you know I'm trying to turn I'm waiting for traffic and and oh shit,

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Risk Assessment
Environmental and Social Context	Attention
Predecisional Processes	Exposure
Exposure	

Excerpt: 97, Location: 56670 - 57604

you know loopy as I watched Loopy screw my dad over time and time. You know dad was trying to be nice be to the neighborly person and right now I keep threatened him I'm going to take him to court but I don't want to. But He owns the lake here but he has to use my land to get his water to the lake which means he needs to maintain my land which he hasn't done for thirty years and it's been eroding and I've been fighting him for the last five years on it. In fact I did go talk to a lawyer about it. But you know. So now I can say we're on bad terms but we're not on any terms. at all. Zero. and I have to say kept you know I had to say this about my neighbor across the road I leant him my tractor one time he filled it with gas is diesel. Interviewer: Oh that's the worst Ruined it. And since there wasn't any paper signed or anything. I got screwed so. We're not on good terms. so I'm on my own here on the corner.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Place History
Environmental and Social Context	Stakeholder Characteristics
Core Perceptions	Environmental and Social Context
Perceptions of Stakeholders	

Excerpt: 98, Location: 57794 - 58170

No not with Weld County. Maybe C O G C C did you know what I mean yeah. With the containing But no not directly

with Weld County Interviewer: And Hudson, that's where we are the right? Is it within the municipality or are you technically outside of that we're all in or outside the the town limits. Rural. So yeah. So it would just go right to weld county after that.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Place History
Environmental and Social Context	

Excerpt: 99, Location: 58798 - 59897

Get a whip on the companies. I like I say I've never really had to deal with Mobile or you know the bigger companies mine was you know those you know the smaller fries of the companies. I don't know I think it is probably depends on how the company is reacting toward that landowner you know to begin with you know if they're if they're going to be compliant with the complaints and go yeah this really isn't right or or um I don't know I think they should just be upfront with the people you know we're going to do well here. We're going to be needing this road. I mean they kind of need, I felt like they were just sneaking behind my back because they knew, they probably knew that this wasn't going to fly. So let's not say anything, let's just do it, and then once when it's there we'll say we're sorry that doesn't work. And they need to be more open of what they're doing with all the neighbors around everybody involved. Not just like Loopy owning the land to put the facility on because you know as far as I'm concerned I was just as involved one they were using my land to get to where

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Perceptions of Alternative Actions
Perceptions of Stakeholders	Action Implementation
	Core Perceptions
	Perceptions of Stakeholders
	Hazard Identification

Excerpt: 100, Location: 59938 - 60761

But two you know right across the fence the noise the commotion the trucks. I mean wouldn't that involve you know surrounding areas the houses. I mean I know I was not the only house. You know that they had to worry about. So maybe they just you know figured It's just one house who cares. One resident. And it wasn't like a neighborhood or anything. I don't know I don't know what they were thinking. I know what I think that they were thinking which wasn't very nice but I couldn't really tell you. So I don't know I think the company was just need to be more open and they need to discuss what they're going to do with everybody around not just the landowner that they're going to put the well on. Just because the noise the traffic and everything that's going on I think they need to be more open to that.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Threat
	Attention
	Exposure
	Perceptions of Stakeholders

Excerpt: 101, Location: 60993 - 62160

Well they did and they always said they had a new contract written up and you know what I never saw it I never saw it Interviewer: So it but they had one? never saw it. So how am I supposed to believe em. You know what I mean how'm I supposed to trust them with you know situations like that. Interviewer: So would they tell you this this is develop you know we have a new contract we have been there and just never show it to you or no later later they said that they they had when shit first hit the fan. You know what I mean and I told them you broke the contract you're taking up more of my land you know blah blah blah. They said well we're going to write We'll write up a new contract. You know. Well by then I decided I don't want these truckers going you know here this is ridiculous. You know and I already decided you know this is got to stop. But you know but like I said I just never saw another contract and I never saw a contract for this road over here that they said that they were going to pay me for so that was in the final settlement. Yeah so I brought out up and so they finally settled on that but in the meantime they never did.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Action Implementation
Environmental and Social Context	Perceptions of Stakeholders
Core Perceptions	Hazard Identification

Excerpt: 102, Location: 65402 - 66748

well that's what's the name of that guy you know it's a puzzle, oh ok yeah it's a puzzle that I put together and yeah. During the time of this Encana deal and everything I was I was really mentally going nuts and the noise and not being able to sleep. I mean when I got fifteen minutes sleep. I would be so we could well be because of the noise and the rumbling the low freq low frequency vibration and I remember one night like it was intermittent You know it would run for about five minutes and stop for thirty seconds and able to vibrate again and this just went on for months for months i tell you. And I just I couldn't find a place in my house to sleep without feeling that vibration and one night it stopped. And it was like whoa. thank god You know this was in between what was the when COGCC didn't have the plant shut down. You know and I just fell asleep and here comes that rumbling fifteen minutes. That's all the sleep I got that night and I called Encana the next morning it was Sunday morning and I called um,the land manager guy and I said it's not right for you to treat human beings this way. This is not right. So then Monday they come out with their hem haw and squishing around again and we're going to try try that and so I called Jim Precupt and he come out and shut em down again. And this just goes on and on

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Risk Assessment
Predecisional Processes	Action Implementation
Exposure	Core Perceptions
	Decision Processes

Excerpt: 103, Location: 66842 - 67992

Right they wouldn't do nothing. Then I mean you know if I talk to Encana they'd hem ham around they try the sound walls and they you know. Well you know the one guys I well we did the tests and there fine. You know we pass all the tests and it's you know jim precupts going we didn't get any tests we didn't get any results of their tests and how how would I trust their tests anyway. I'm mean really you know get some independent sound guys out here. and then they always wanted to test right here in the trees. Now test over here where it's echoing. You know what I found out later I could tell them where to put their tests yeah yeah I found out later that you know the landowner use like no no no this is where the noise it's over here. But they didn't know where to put it. And I think they were trying they were testing more for the semi truck noise and not their damn separators that was running twenty four seven squealing at decimals way up here that you could live with. So see I mean they're just kept trying to fill avoid everything you know they just figured their plant was running fine. They were making money. I mean.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Perceptions of Threat
Environmental and Social Context	Risk Assessment
	Attention
	Decision Processes
	Exposure
	Perceptions of Stakeholders

Excerpt: 104, Location: 68020 - 69746

and who was I It was just me complaining I was the only complaint. You know this one kid came in here parks right in the middle of my backyard here from Encana to do a sound test. The facility was shut down. So how is he going to do a sound test when its not even running and so I go out there and it's like Who are you. And he goes Well some old lady across the street complained about the noise so I'm here (he said he that!) and so I just kind of let it go. You know what I mean. And that was the day I called my lawyer and I said shut it down. I've had enough of this and um So anyway so I came in called my lawyer told him what happened. You know and I said call their lawyer shut this thing down. This is it we're done. And so then I went out there and I asked for him for his business card. You know he gave it to me and I said you know this is private property. You're parking on. "Well I'd thought it was Encana's overflow" and I said and you know that old lady who was complaining about the noise that was me. Then he just got all shook up the you know it's like get the hell off my land. But I mean this is the attitude encana kept throwing at me the whole time. I mean how am I supposed to respond. And yet on the other side of the fence I was raised. You know to be a good person. You know to try to work with people to be patient. You know and I found out later there. I was stupid for being in that way. I really should have dove in there hard nosed with my horns in front of me. You know gouging. But I'm just not that kind of person. So. I guess I that was why it took longer than maybe other people got quicker results than me because you know I Just wasn't forceful enough. Yeah.

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Perceptions of Threat
Environmental and Social Context	Receiver Characteristics
	Environmental and Social Context
	Attention
	Exposure

Excerpt: 105, Location: 68088 - 69245

You know this one kid came in here parks right in the middle of my backyard here from Encana to do a sound test. The facility was shut down. So how is he going to do a sound test when its not even running and so I go out there and it's like Who are you. And he goes Well some old lady across the street complained about the noise so I'm here (he said he that!) and so I just kind of let it go. You know what I mean. And that was the day I called my lawyer and I said shut it down. I've had enough of this and um So anyway so I came in called my lawyer told him what happened. You know and I said call their lawyer shut this thing down. This is it we're done. And so then I went out there and I asked for him for his business card. You know he gave it to me and I said you know this is private property. You're parking on. "Well I'd thought it was Encana's overflow" and I said and you know that old lady who was complaining about the noise that was me. Then he just got all shook up the you know it's like get the hell off my land. But I mean this is the attitude encana kept throwing at me the whole time. I mean how am I supposed to respond

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Place History
Environmental and Social Context	

Excerpt: 106, Location: 69846 - 70151

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Stakeholders
Core Perceptions	

Excerpt: 107, Location: 69846 - 71219

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah. What was I going to say. About his good attitude. Sorry. Brain fart. um, Oh yeah that you just get a,a you know you get a different attitude from him. You know one hundred percent for the gas wells. he was telling me that not only do we have one layer of gas oil underneath there is two more. And they haven't even hit down into the other two they haven't even touched those yet in this basin area. So yes that does scare me because if this was only the product of the first layer. What's going to happen later on down the road. Hopefully I'll be dead and gone. You know what i mean. hopefully hopefully it won't be in my lifetime. But who's to say that they want to come in and you know put a facility kind of like Anadarko did down here in the middle of field in luppy well hell man that's that's another ticket to Hawaii for a month with his wife he wouldn't care. Would nor would he discuss it with me. How would you feel about having that here. You know but like I say it's his land to do what he wants to look at you when you're against it.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Core Perceptions	Hazard Identification

Excerpt: 108, Location: 69846 - 71219

I worry about drilling more I worry about um I have a neighbor. Well he's sold that he kept the mineral rights and he is really and it's gas oil and you know you talk to him he loves it you'll get a whole different perspective through it all. Yeah it's only as always you know yeah yeah yeah yeah yeah. What was I going to say. About his good attitude. Sorry. Brain fart. um, Oh yeah that you just get a,a you know you get a different attitude from him. You know one hundred percent for the gas wells. he was telling me that not only do we have one layer of gas oil underneath there is two more. And they haven't even hit down into the

other two they haven't even touched those yet in this basin area. So yes that does scare me because if this was only the product of the first layer. What's going to happen later on down the road. Hopefully I'll be dead and gone. You know what i mean. hopefully hopefully it won't be in my lifetime. But who's to say that they want to come in and you know put a facility kind of like Anadarko did down here in the middle of Lucy's field in luppy well hell man that's that's another ticket to Hawaii for a month with his wife he wouldn't care. Would nor would he discuss it with me. How would you feel about having that here. You know but like I say it's his land to do what he wants to look at you when you're against it.

Code Applications

Trainer Codes	Trainee Codes
	Perceptions of Alternative Actions
	Perceptions of Threat
	Core Perceptions

Excerpt: 109, Location: 75198 - 76102

I asked Spirit send me a woman to work with i did honestly you know and I wasn't totally impressed with Wendy. But yet there was still that feminine and or you know there was that feminine or that quality in there like when she found out that these guys dump their tires and use me for a dumping that then she kind of you know started sitting you know what I'm saying. And yeah yeah. Not that you know it's hundred percent perfect but you know I just felt I don't know I said Spirit send me a woman that I can talk where the so nice. He sent me Wendy much better than I guess so. I mean you know if you very much told me she was going to squish me like a bug if i went to the media again you know but you know I have to say that you know she did help you know it did help the situation. You do maybe you do need male female interactions going on there just as well as in anything else I do know.

Code Applications

Trainer Codes	Trainee Codes
Stakeholder Characteristics	Stakeholder Characteristics
Environmental and Social Context	Receiver Characteristics
Core Perceptions	Environmental and Social Context
Perceptions of Stakeholders	

Excerpt: 110, Location: 79527 - 79767

t's. I mean living here for forty at the time forty three years and then all of the sudden this destroys I feel like it really kind of destroyed my life,, my farm. You know what I had they took so much away from me and didn't give a crap.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Threat
Risk Assessment	Hazard Identification
Core Perceptions	
Decision Processes	

Excerpt: 111, Location: 79770 - 80455

Yeah) you know and then the one guy I'm Mike he goes well you get royalties don't you as if that's supposed to make up for everything. Hundred eighty seven dollars a month poorly. I mean first three months checks are coming in, You know like I got OK I got five grand on my loyalties now I know Wayne he was picking up three times as much so course exactly what. You know and of course it decreases as it goes down. Well I remember before they put this in Dad was getting forty seven dollars a month. For royalties. So it's not like I'm pulling you know a lot and I told my lawyers that it doesn't matter how much money they give me. They took so much away from me and my life.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Threat	Perceptions of Alternative Actions
Receiver Characteristics	Perceptions of Threat
Environmental and Social Context	Risk Assessment
Core Perceptions	Core Perceptions
	Perceptions of Stakeholders

Excerpt: 112, Location: 81161 - 82030

love it. I mean you know I just my dying wish is just fall face forward and kiss it goodbye. Well I mean that's my dying which don't put me in a hospital or a nursing home just let me get the land and kiss it goodbye as I go yeah it's a big love to my life and then this year just you know. But then I try to look on the bright side loopy could have put up a shooting range over there you know what I read so at least once when we get em quieted down and something it's a lot more tolerable Yes You know it is you know it's, It's doable. And not that I like it but it's. Its doable. But you can you can. Yeah yeah that makes sense took a lot of adjusting a lot of brainpower to get me. you see that puzzle there? I've got maybe fifty seventy five of them out in the shop that's all I did during this fight with Encana was puzzles to distracted to keep me sane

Code Applications

Trainer Codes	Trainee Codes
Receiver Characteristics	Protective Action Search
Environmental and Social Context	Perceptions of Alternative Actions
	Stakeholder Characteristics

Excerpt: 113, Location: 81739 - 82635

Its doable. But you can you can. Yeah yeah that makes sense took a lot of adjusting a lot of brainpower to get me. you see that puzzle there? I've got maybe fifty seventy five of them out in the shop that's all I did during this fight with Encana was puzzles to distracted to keep me sane. Interviewer: So are these puzzles over here too? Yeah yeah I frame em. You know I just I couldn't put him back in the box Moore's Oh I'm just going to prove to him and now the back part of the shop is all puzzles like that I would have a fit if he went back to earlier or I think oh that there. (That's a funny) instead of his tires soon I'll be honest I had I wasn't fair. Interviewer: I said I hate doing puzzles but I saw it all are to go like OK Some people say it's really really relaxing time it was good therapy because it didn't take my mind off the problems off of the situation.

Code Applications

Trainer Codes	Trainee Codes
Perceptions of Alternative Actions	Perceptions of Alternative Actions
Core Perceptions	Action Implementation

Excerpt: 114, Location: 18112 - 18161

If you've got you know dirty sneaky contractors

Code Applications

Trainer Codes	Trainee Codes
Core Perceptions	Core Perceptions
Perceptions of Stakeholders	Perceptions of Stakeholders

APPENDIX CHAPTER 4:

Codebook Principled Engagement

Table A4.1: Code examples and definitions as applied to network connections within the dataset.

Concept	Definition	Example
Principled Engagement	Dialogue or communications between residents and firms or residents and firms and the State of Colorado or residents and firms and local government officials. Requires back and forth information exchange and not one or two way notification/communication.	“Yeah but it went through for it when I mean it was informal but it went through a fairly formal process as much as there were lots of meetings about it this that and the other and we probably had meetings and meetings and meetings”
Discovery	"Revealing of individual and shared interests, concerns, and values, as well as to the identification and analysis of relevant and significant information and its implications (Emerson and Nabatchi 2015)	“So when I meet with _____ people this week I already informed him that we have an issue down there and they wanted to know what it was and I said just wait...”
Definition	Efforts to build shared meaning around issues, including roles, problems, terminology used to describe actions and outcomes.	“You just lost you know your house essentially and you have no recourse you have no way to communicate with anybody about it talk to anybody so that was that was actually a really nice thing for me he was like you got a problem to call i can tweak things and i would be glad to do so.”
Deliberation	Use of candid, reasoned discussion	“I showed _____ that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean.

	around issues (Emerson and Nabatchi 2011), with the potential for determinations.	And there was excuses like that through the whole process. Well what is this vibration ____ well I don't know.”
Determinations	Decisions made either in regard to risk mitigation actions, community actions, procedure, or addressing citizen concerns.	“The county told them if we grant these permits you have to do these things so it was a condition of the permit. It wasn't so much of us working with the commissioners. It was just that the commissioners felt like this would pacify us enough.”

Table A4.2: Protective Action Decision Model Codes used for level one coding.

Protective Action Decision Model (PADM)			
Environmental and Social Context			
	Receiver Characteristics		
	Identity	Personal identity of individual including pre held thoughts and beliefs.	
	Place History	History and context for place of complaint and how long that person has lived there	
	Locational Attributes	How a person conceives of their neighborhood, place	
	Place Change	Statements about transitions of place	
	Rural, Suburban	Statements about either rurality or suburbanness	
	Receive Payments for Oil and Gas	Statements about payments, royalties for oil and gas.	
	Stakeholder Characteristics	Characteristics of individuals and groups involved in responding to hazard.	
	Stakeholder Identity	Identification information of the stakeholder the individual talked to	
	Network Connections	Communication pathways or statements of communication with other stakeholders.	
	Expert	Scientist, landman, or other externally hired/consulted actor with expertise.	
	Neighbor	Other citizens	
	Firm	Oil and gas companies and employees	
	State Government	Managers employed by the state of Colorado	
	Local Government	Managers employed by local government.	
	Watchdog	Newspapers, reporters, journalists etc.	
	Organization	Nonprofit or for profit advocacy or community groups and their members working in official or advisory capacity ie: In Battlement Mesa, BCC initiated connections are via organization NOT neighbors.	

Predecisional Processes			
	Exposure		Receipt of information/message/warning
	Warning		Official notice
	Social Cue		Observations of others behavior, group dynamics, being told by a neighbor
	Environmental Cue to Sound, Smell, Feel (Motion), Sight		"Sights, smells, or sounds that signal the onset of a threat whereas social cues arise from observations of others' behavior." Lindell and Perry 2012
	Comprehension		Ability to understand message, meaning of message
	Attention		Do they notice the warning
Core Perceptions			
	Perceptions of Stakeholders		How individuals perceive of stakeholders involved in the management of oil and gas risks
	State Agency, Neighbors, Local Government		
	Perceptions of Firms		How individuals perceive of firms in their attitudes and actions.
	Sentiment Positive		Positive perspectives on stakeholder
	Sentiment Negative		Negative perspectives on stakeholder
	Collusion/Capture (for state)		Ideas that state is on side of producers not citizens
Perceptions of Threat			
	Psychological Factors		
	Dread		Statements about future risk
	Probability		Statements about likelihood of impact
	Severity		Statements about magnitude of impact
	Unknown Risk		Statements about lack of knowledge about a risk
	Intrusiveness		Frequency of thought and discussion about a hazard and responses to it.
	Proximity		Statements about how close a risk is.
	Nature of oil and gas development		Attitudes, actions, and opinions on the broad nature of oil and gas development in all its forms
Perceptions of Alternative Actions			Receiver perceptions of what actions could be taken in response to a threat.
	Efficacy		Statements about outcomes achieved or what was accomplished via an action
	Barriers to Effective Investigation		Elements that prevent an action from being effective
	Access		Variables affecting ability of actor to enter into alternative action
Decision Processes			
	Protective Action Search		
	Information Retrieval		Retrieval of information about actions that can be taken either from memory or another source.
	Method		How was information accessed
	Source		What was the source of the information

	Risk Assessment	Assessment of expected impacts of a threat that forms a rationale for actions.
	To community, to health, to property	Code for where individual assess the threat to.
	Hazard Identification	Recognition of a hazard as real and present or the realization that a situation is not normal.
	Action Assessment	Determinations about what potential protective actions to take
	Action Implementation	The act of complaining/protecting/meeting or acting to mitigate risks/externalities of oil and gas

Recruitment Letters:



EVANS SCHOOL OF PUBLIC POLICY & GOVERNANCE

UNIVERSITY of WASHINGTON

Dear Kenneth Williams,

I am a PhD Candidate at the University of Washington studying Public Policy and Management, and I am interested in talking with you about your experiences with oil and gas development in your area. I selected you as a potential participant because you filed a complaint with the State of Colorado concerning a local oil and gas site. The state recorded your address information which is how I am able to contact you.

The goal of my research is to understand how management structures can be adapted to address risks of oil and gas development, and to understand the role residents like yourself may play within that process. Specifically, I'm interested in hearing about your attitudes concerning natural gas and oil development and about any interactions you may have had with corporations and or government agencies. I'm hoping you can also help me understand the role citizen complainants may play in shaping the governance of oil and gas development.

If you would be willing to talk with me, I would appreciate you would respond via a webform at:

<https://staff.washington.edu/rscott5/oil-and-gas-interviews>

Alternatively, you can email me at rscott5@uw.edu, or reach me via phone at (253) 569-7236.

We can then set up a time to talk. I plan to be in Colorado in mid October, and if possible, I would love to set up a time to come talk to you personally. If that does not work, we could also arrange a phone call or talk via something such as Skype.

I do not expect our conversation will take more than an hour, and I will very much appreciate your participation. Of course, any information you provide will be confidential within the limits of the law, and I will work to help ensure your privacy is protected. The consent agreement for our discussion is also available at <https://staff.washington.edu/rscott5/oil-and-gas-interviews>, and it further describes your rights should you agree to talk with me.

Thank you again for your time. Please let me know if you have any questions, concerns, and/or comments for me. I look forward to hearing from you soon.

Sincerely,
Ryan

Ryan P Scott, MS
PhD Candidate, Evans UW
rscott5@uw.edu
253.569.7236

Daniel J. Evans School of Public Policy & Governance Parrington Hall 109 Box 353055 Seattle, WA 98195-3055
main 206.543.4900 fax 206.543.1096 evans.uw.edu



Dear Stephen Tonkin,

I'm writing in follow-up to a previous letter I sent you asking if you'd be willing to participate in my research project. Hopefully this letter reached you. I am a PhD Candidate at the University of Washington studying Public Policy and Management and I am interested in talking with you about your experiences with oil and gas development in your area.

I selected you as a potential participant because you filed a complaint with the State of Colorado concerning a local oil and gas site that stood out to me due to the characteristics of the oil and gas site. Though our discussion, you can help me understand the role citizen complainants may play in shaping the governance of oil and gas development. This will play a critical role in my larger goal of learning how future management structures can be adapted to manage social and environmental risks of oil and gas development.

Participating in the study simply means having a conversation with me about your experiences—I have a brief set of questions to run through, and I do not expect our conversation will take more than an hour. Of course, any information you provide will be confidential within the limits of the law, and I will work to help ensure your privacy is protected. The consent agreement for our discussion and other details are available at <https://staff.washington.edu/ryscott5/oil-and-gas-interviews>.

I'll be in Colorado in mid October— between the 17th and 24th, and would be love to sit down with you and hear your perspective. If you would prefer, we could talk via phone or via an internet connection. Either way, we can schedule something for a time and location that is convenient for you.

I would appreciate if you would respond via email at ryscott5@uw.edu, via phone at 253.569.7236, or via webform at <https://staff.washington.edu/ryscott5/oil-and-gas-interviews>.

Thank you again for your time. I look forward to hearing from you soon.

Sincerely,

Ryan
Ryan P Scott, MS
PhD Candidate, Evans UW
ryscott5@uw.edu
253.569.7236

Dear Karen Truelove,

Daniel J. Evans School of Public Policy & Governance Parrington Hall 109 Box 353055 Seattle, WA 98195-3055
main 206.543.4900 fax 206.543.1096 evans.uw.edu

Script

COMPLAINANT SEMI-STRUCTURED INTERVIEW SCRIPT

Hello, my name is Ryan Scott, thank you very much for taking time out of your busy schedule to talk with me.

I'll begin by introducing myself, and my purpose. Then I invite you to ask any questions or express any concerns you might have so we can address those from the beginning. Does that sound alright?

I'm a Ph. D. Candidate at the University of Washington, as you may know, I'm interested in understanding what your experience has been with natural gas development. I'm hoping today we can have a casual conversation about what your experience has been with gas development and any factors that have been critical in shaping either your attitudes or experiences. I've brought along a series of questions to ask you, but I'm going to approach the questions in as conversational a manner as possible. How does that sound?

[consent]

Wonderful. If it's okay with you, it would be helpful if I could record our conversation here today. The benefit of me recording it is I will go through and produce an exact transcript of our conversation today rather than simply relying on my own notes. It's a way of making sure I can do my best job as a researcher.

[BACKGROUND]

To begin with, I'd love to hear about how long you've lived here in this part of Colorado and what is it that attracted you here?

[OIL AND GAS PERSPECTIVE]

Can you tell me about what oil and gas development in your neighborhood.

Do you happen to know how close the nearest well sites are to your residence?

What are the benefits of these well sites?

What are the things that bother you about these well sites?

Do you have any perspectives on oil and gas that you have now that are different from perspectives you used to have?

PROBE: Are there any events, instances, you can think of that have been pivotal in shaping your attitudes about oil and gas?

,

[FIRM BEHAVIOR AND PRACTICES]

One thing I'm interested in how firm behavior affects local citizens. Could you tell me about any contact you've had with firms conducting oil and gas operations.

Has firm contact shaped your perspective on oil and gas development in any ways?

PROBE What aspects of firm contact shaped your perspective?

Did you learn anything as a result of that contact?

PROBE: If not, why not? If yes, how?

What more could firms do to meet your needs as a local citizen?

[COMPLAINT FORUM]

I'd like to ask you if I could about interactions with the state oil and gas agency. Have you contacted COGCC before, either as a part of the complaint process or otherwise, and if so what was that process like?

Can you tell me about the outcome of that contact with COGCC?

How has that contact changed your perspective on oil and gas in your region, if at all?

How has that contact changed your perspective on the oil and gas agency, if at all?

How has that contact changed your perspective on oil and gas companies, if at all?

Did that contact help lead to changes in how oil and gas were managed near you?

PROBE: If not, why not? If yes, how?

Did you learn anything as a result of that contact?

PROBE: If not, why not? If yes, how?

[CONCLUSION]

Are there any other things you think I should know about oil and gas development or your experience with it?

Thank you very much for your time. My next task will be to transcribe our discussion. Please feel free to contact me with any questions or concerns you may have moving forward.

Demographic Counts

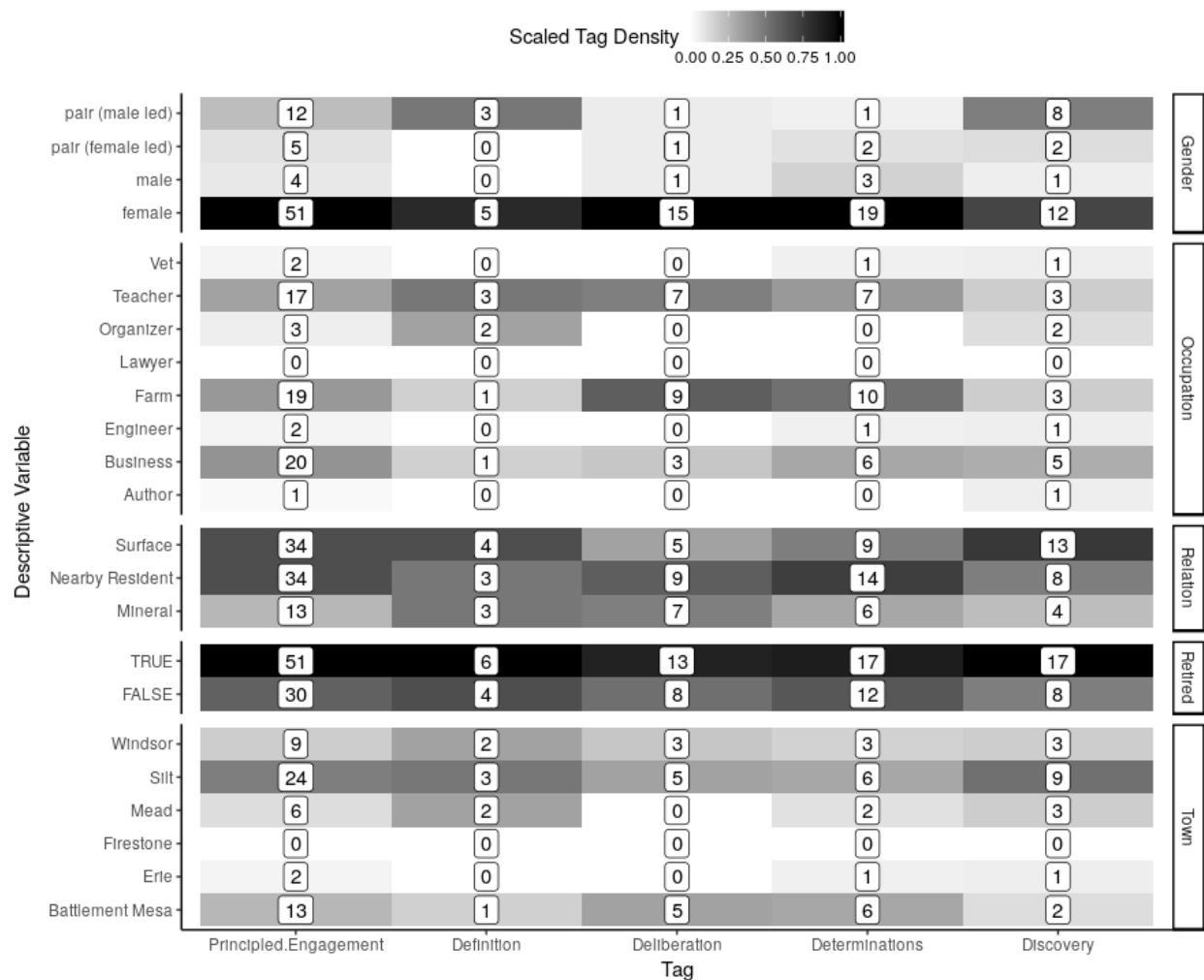


Figure A3.1: Counts of demographic variables across the principled engagement categories.

Codes Applications for Principled Engagement

Table A3.3: Excerpts and codings used for describing principled engagement in chapter 4. True indicates the presence of a code for that excerpt.

Excerpt Copy	Code: Principled Engagement Applied	Code: Discovery Applied	Code: Definition Applied	Code: Deliberation Applied	Code: Determinations Applied
he had to come over to talk to us about another complain ad he said we are gonna have to do this for two more years what are you talking about	True	False	False	False	False
the other people who were with extraction understood that but they were very much they did not want to tick us off they were very um	True	False	False	False	True

accommodating and wanted to know you know what would help us to ease the process so then they that's when that wall went up					
Based on my review of the complaints, the state consistently recognize ___'s complaints as valid, but they did not usually take any action to correct the problem other than waiting for some time for a pit to finish drying or for a company to take action. This was not necessarily due to negligence, but more likely due to limits in the power of the state to effect change in company behavior.	True	True	False	False	False
the complaints leads to contacts between the firm and the state agency, the firm talks to the enlows, and the state agency talks to other companies about how to solve the problem.	True	False	False	False	False
I discussed these issues with the operator and the operator agreed to install more rock in the vehicle tracking pad and the operator would have a street sweeper at location to clean any excess mud tracked onto WCR 13	True	False	False	False	True
SHANE: AIR IS STILL (LITTLE OR NO BREEZE?). JK: THIS COULD BE ANNUAL EVENT: I HAD RECEIVED SIMILAR COMPLAINTS FROM ____ 10/05 AND 10/06. WILL OFFER TO BE IN VICINITY AT THE "PRIME TIME" (EARLY MORNING) WHEN CONTACT THEM. TALKED W/ ____ 11/1: HE SAID THAT WIND FROM SW OVER AND THRU' THE WILSON LOCATION. HE WENT TO LOC AND NOTED COMBUSTOR OPERATING. WELL SHUT-IN? JK OUT IN AREA 7 - 9 P.M. 11/2. WILSON LOC WAS OPERATING, NO ODORS. COMBUSTOR GOING. NO PIT, NO STAINING AROUND TANKS. ALSO CHECKED ANTERO LOC TO NORTH (VALLEY FARMS "F") -- BEING FRAC'D BUT NO DISCERNIBLE ODOR FROM THAT LOCATION TO THE SOUTH/SOUTHEAST.	True	True	False	False	False
H BAIRRINGTON FROM J K DATED 10/26 ATTACHED TO ORIGINAL "MAIN" FORM 18 (DOC # 200078557). I ALSO CALLED JIM MARTINEZ (ENCANA) ON 10.26 REGARDING WHAT HE/THEY DO TO MITIGATE PIT ODOR. JIM SAID THAT COMPANIES LIKE SCHLUMBERGER AND BJ HAVE "INDUSTRIAL STRENGTH" POWDERED BLEACH WHICH, WHEN ADDED TO THE PIT FLUID, IS PUMPED AND CIRCULATED ("ROLL THE PIT") -- WORKS QUICKLY.	True	True	False	False	False
WE ALL COULD SMELL INTERMITTENT (BUT PERSISTENT) ODORS. JEFF AND I MADE NOTE THAT ENLOW HOUSE IS IN A SORT OF 'HOLLOW' -- DOWN (EAST/NORTHEAST) FROM PAD. ASKED JEFF WHO HE'D CONTACT AT BBC AND WHAT HE'D SUGGEST FOR THEM TO DO. JEFF SAID THAT HE THOUGHT "THEY" WOULDN'T LISTEN/RESPOND TO HIM BUT WOULD LISTEN TO ME (?).	True	False	True	False	False
What does it say about that s an eliminated one. the yellow ones are the ones eliminated this one and this one and this one originally they were going to do ten well pads and Antero was going to do I think twenty. You're going to have to get better information about exactly where those are you know this is the Ursa thompkins pad or pipeline and it's eventually going to be going up to here where they will have another place probably have a.	True	False	False	False	True
But they are asking the Ursa industry the Ursa company they have to do a lot of mitigation. And one thing that they have to do if they come in site of our PUD. They can only drill between the hours of seven in the morning and seven in the evening. Otherwise this goes on twenty four hours a day until they get a well pad drilled and fracked and the process water up at all this stuff. So their mitigation statement says that they can only dribble between seven in the morning and seven in the evening. So that people are here have to hear that noise during the night they have to do the lightly geishas they have to instead of having their light skinned or just going up in the air they have to. To kind of. I don't know exactly how they're going to do it but keep the lights down right so they won't be shining in neighborhoods and so forth. They have to cut the amount of truck traffic in and out in and out. And one way to do that is to do it is to take a pipeline from the well pad down by the river which is is b pad up to the well pad here which is the yader pad site. And so if the water	True	False	False	False	True

comes from where it goes up there then it'll just keep their head from having water trucks go back and forth back and forth really bring water. Because as I told you. To drill one pad takes a lot of water.					
We've had meetings with the zoning and planning commission. And the commissioners and they have come down and walk down the particular pad sites. And still decided it's OK to drill down here. But they are asking the Ursa industry the ursa company they have to do a lot of mitigation. And one	True	False	False	True	False
The other mitigation was. They have to. Well one if we go out for a drill. You'll see this one type of wall that Ursa puts around their well pads they put in these big pilings and then they stretch these they look like canvas panels. So it's coat the. Well pad site is covered under three sides by this. This wall of canvas the only side that's open is one side which seems to be pointed away from the house housing something. Anyway that's supposed to cushion the sound the loud sound you hear when they're drilling and fracking. And it works. Somewhat. Because if you're on the side where the wall is you don't hear the noises like the dish you would if you're on the other side or the open side is. So that's another thing that your person does they put down that three sided wall around each one of their well pads. And. What are some of the other things but all air monitors have to be on the well pad site at all times.	True	False	False	False	True
and that was one thing, in two thousand and eleven was the first time I went over and testified before the colorado oil and gas commission. Dave Devaney was one of the well over. Some others from here. And from that testimony. They agree to the one thousand foot setback from schools and hospitals and they agreed to a five hundred setback from homes. Which was more than it was before before it was you could drill within three hundred fifty feet of the house. And that was OK but the new ruling in Colorado says you have to be Five hundred feet from a dwelling. Thousand feet from a school or a hospital so Those are things. Those are mitigations that Ursa has had to do. So I think we may get a little headway that way.	True	False	False	False	True
One suggestion to work together his wife who lived over in the speakmnd pad was Well why don't you go to the motel why don't you just leave your house and go stay in a hotel if the lights are bothering you. Noise. Now isn't that pretty stupid. I mean. And in other words. We'll keep doing what we're going to do you'll have to find a solution and to me it should be the other way around.	True	False	False	True	False
And so Ursa says we won't put an injection well there right now. But I say to one they like it you know it's it's kind of hidden down in the language on down through the contract where they hope somebody will skip over it with a signed saying that they can put it in there. You know you how they word things and contracts and stuff. Anyway this issue is huge in the state of Colorado because the Front Range.	True	False	False	False	True
hey have representatives at the colorado oil and gas thing and we had a contact that we worked with on our deal, and they, i guess you'd say they did as much as they good they just go through all the legal process and everything else it gets real complicated that way, you know cogcc guy, you know there again I have mixed feelings about how good a job they do, so , as far as how good a job the agency does or the person you worked with the agency	True	False	False	True	True
You know I went to the first meeting where a lot of us local residents were hoping that we could, You know, put a halt you know and kind of take a step back and it turned out that the only thing that the town the board of trustees could say was like oh yeah everything's in place and we approve the permit like it was already a done deal. They have no power. It's all the state. So anyway so after that I started just looking at well who got notified and who didn't. And that's when I started looking at you know the distances and how far away I was going to be from the site and then and stuff was going up.	True	False	False	False	True
I discussed these issues with the operator and the operator agreed to install more rock in the vehicle tracking pad and the operator would have a street sweeper at location to clean any excess mud tracked onto WCR 13.	True	False	False	False	True
Y. THE ELEC. SHOCK TREATMENT CAN TAKE TWO DAYS. JEFF	True	True	False	False	True

AND I WENT BACK TO THE WILSON PAD AND TALKED WITH KEVIN. I STUCK A FINGER IN THE PIT AND THERE WAS A SLIGHT CONDENSATE ODOR -- WHICH COULD BE DETECTED ON MY FINGER HOURS LATER. KEVIN THINKS 2 WELLS REMAIN TO BE COMPLETED. LEFT MESSAGE WITH _____ 10/28					
COPACETIC. _____ SAID THAT THE ODOR STARTS AT ABOUT 3:30 AM. SHANE: AIR IS STILL (LITTLE OR NO BREEZE?). JK: THIS COULD BE ANNUAL EVENT: I HAD RECEIVED SIMILAR COMPLAINTS FROM ENLWS 10/05 AND 10/06. WILL OFFER TO BE IN VICINITY AT THE "PRIME TIME" (EARLY MORNING) WHEN I CONTACT THEM.	True	True	False	False	False
As a result of one of the complaints, COGCC contacted another company and asked what they might do-- the company contact said that BBC wouldn't listen to them but if the COGCC Operator suggested a change they would likely listen. Deon talked to multiple agents over the year and sometimes they were able to identify the source of the odor and sometimes they were not; however, the location of Dion's residence near the divide creek well seep, and the spill at the Epperly's property, and in the Mamm Creek area all complicate matters.	True	True	False	True	False
Antero claimed to have drilled 175 wells in the area between rifle and parachute for which it had worked with local communities. The 2009 surface use agreement between BMP and Antero granted numerous rights to Battlement Mesa Partners. http://www.battlementmesacolorado.com/sites/default/files/uploads/oil_gas_surface_use_agreement_2009.01.15.pdf	True	False	False	False	True
ah gee, ah you have to generally you arrive at an agreement of , you know of a surface use damage when they come in there for these well pads, of you know, how much damage it would be to your property and you know, in our situation it was based on how many wells were drilled on these pads and such.	True	False	False	False	True
And I fought that and fought that and cog, C O G C C fought it with me and I don't know how Jim did it but you know he had some meetings with them and finally got him to get rid of the separators. And then they brought other people out to measure the low frequency vibration and you know," oh yeah it is too high" and they finally got their equipment turned down and you know it was just a battle for a year and a half with them. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass them on the on the highway and feel like a dog with his head out the window barking at em.	True	False	False	True	False
I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week. Interviewer: And you said you got them to downsize. Yeah yeah me cogcc.	True	False	False	False	True
It took a lot of my time convincing that they've ruined my property and we're still working on problems but, I um they left my roads in horrible condition.	True	False	False	False	False
You know and to hell with koscove. They thought I was out of my head but you know if it was yours i don't think you would be happy either so finally after a year, a year of talking i told them to get off my land and they filed hired a contractor the contractor came and dug up all the stumps and removed them all. So this was one complaint. that i had filed	True	False	False	False	True
But I now have a surface use and compensation agreement with Oxy on Everything they do on my ground.	True	False	False	False	True
And they own a grader there is a grader sitting in their office compound and my roads you know in this condition again. So when I meet with Oxy people this week I already informed him that we have an issue down there and they wanted to know what it was and I said just wait till Thursday and then see if you know. what's wrong with it.	True	True	False	False	False
Interviewer: So within here there's like so for example like David Woeste. Yeah that's the landman that's the man coming up here thursday we are working together now in fact he told me the other day we are going to be a team. Interviewer: You and David are going to be a team	True	False	False	False	False

can't sit down very comfortable is why					
I went down to to meet with David because of all the problems I wasn't very nice person I used a choice of words	True	False	False	True	False
So he comes up here three or four times a year he makes a fast trip down to the ranch and he's kind of learned some things from me cause kind of don't turn around and you need to check things out and get it bring this up to him tomorrow. You know if you want me to work with him he has to listen to me.. We have some serious problems down there right now they've had trucks coming down and the ro	True	True	False	False	False
We have some serious problems down there right now they've had trucks coming down and the roads are washboards that you know it's a shame that the county has to fix a roads when they're the ones who destroyed the roads the county road. They have these rigs going there are these vehicles and they drive dirt road and they've just ruined the road you can only drive like ten miles an hour down there and you get shook so badly. You wonder if you go make it across so I had mentioned he called me this morning and I told him there is an issue down there said where he it may sit well we'll see if you can figure out.	True	True	False	False	False
you know what they do when they bring someone down is the cosmetic tour you won't get the cosmetic tour when i expressed david i wanted the engineer off the ranch he hides from me but when i seem i'm going to tell him there is the road. the engineer his boss is a geologist and i don't like here either . She came up here and I had dinner with here and I asked you a question about water and it went right over her head. You know water is critical and she kind of was a smart aleck and like type of person. So I spoke to management i spoke about her first and i said I don't want her on my ranch. So the poor manager i looked at my phone and my phone went dead.	True	False	False	False	False
And i said wait a minute sire you know my parents were. And I said he said he doesn't know if he can get him off and you can't I can't quite I said to the biggest problem with oxy is nobody has ever come to see me aunt. So you know they're sitting down in Texas and you know they think it's just like Texas open land. Nothing. You know we can destroy as much as we want and you know that's the way the cookie crumbles. So I said to this man after the other day and i said to him have you ever been to Sheep Mountain and he said no and I said well if i come Will you take me every tour and I said No I think you need to have David take you in and he said you know David this is only going to give me a cosmetic tour. and the biggest problem ryan is nobody actually management a few have them have come now but nobody has come to look at the mountain the physical layout of the land what they need to take a look at before they destroy the land.	True	False	False	False	False
There's two things you need to be honest straightforward with me because if I find them to do surprise them were lots of questions then you know it. That's the only way I can succeed is if I don't understand something I need me till I know exactly and seeing what was done on a ranch base camp scene more and more and you know it's kind of like a joke. Let's keep tearing it up worse and worse. You know you have trees that are hundred fifty years old and you cut them down and then you decide you know going to drill. That's not funny. so they replace a tree and the lot of the tree i ask that they plant mature. trees so they have six foot trees. So you can't plan a tree and not so I went to another ranch and you know where they are I don't brag about it.	True	False	False	False	True
They know exactly everything about it. They think they know everything about. So I have another ranch in the mountains here the other day they came and they dug up a whole bunch of my trees from this ranch and transported him there. But they have a larger than there are some of the trees a couple of them. You know they weren't put in the ground very good. So when David you know he's going to walk a little bit he doesn't have to walk that far hes young hes forty five years old. So you know I wished I was young again you know you can but I'm happy you know I had a good life. So I can't complain but you know it's just they think like when they plant the trees. when it's gonna rain again? I said what're you talking about rain? it never rain	True	False	False	False	True
So then when he answered back I said I thought were were a team now	True	False	False	False	False

so then he emailed me back and said it'll be watered next week.you use his own words on him.he's got a tough cookie working for him.					
they were scrambling for a long time but now this guy david comes up its wine and dine no i don't let them do that they take me out for dinner and i take them out for dinner.	True	False	False	False	False
I think the community meeting up in Greeley helped a ton mostly because it was more connected to the gas commission and the complaint cycle you're not you're not talking to somebody really in the know are you talking to somebody who is just going to go check your complaint see if there is a violation or not I think the town hall meeting was was a formative in the sense that they talked about. Here's what the regulations are today. Here's what we want to change to here's why. So I think there was a little bit more information exchange there. So the first meeting w I'm going to say a three hour meeting and he made maybe made.	True	True	False	False	False
And that's when I called David was at home and I told him I said David bring management here they were right in this same room and i started telling him what problems they were so they finally fired the contractor. But in the meantime the guys that hated me the stooges They kept give them to work just to agitate the hell out of me. They gave them that six months more work just to agitate me when i told David that... So you know I like to joke around. I have a lot of I'm in a position where I like people. I do a lot for people people but I like to be respected. You know get a lot of respect. But you know I just don't like people. I don't play games. So I have a question for you. Yeah I told you a lot of things.	True	False	False	False	True
I hired a landman on my own and the land man and I went down to to meet with David because of all the problems I wasn't a very nice person used a choice of words and a couple of like a month later we went to a county commissioners meeting in Musselburgh and he asked me if I had to dinner with him and we kind of agreed that we could we could try to see if we could work together. To some of the problem. So he comes up here three or four times a year he makes a fast trip down to the ranch and he's kind of learned some things from me cause kind of don't turn around and you need to check things out and get it bring this up to him tomorrow. You know if you want me to work with him he has to listen to me.. We have some serious problems down there right now they've had trucks coming down and the roads are washboards that you know it's a shame that the county has to fix a roads when they're the ones who destroyed the roads the county road. They have these rigs going there and these vehicles and they drive dirt road and they've just ruined the road you can only drive like ten miles an hour down there and you get shook so badly. You wonder if you go make it across so I had mentioned he called me this morning and I told him there is an issue down there said where he is it may sit well we'll see if you can figure out.	True	False	True	True	False
I sent him an email and asked him all these questions and these are my questions here. If you can look at the questions in these various answers here. So you know when they could read the whole thing and then when it comes down here. This is where he said when a man power becomes available. So this is his response.	True	True	False	False	False
I called David I said you can't believe the kind of we're this guy did this is like you put a straw in a pipe and the water is leaking out of the bottom and they never came to check his work and the more work this contractor did the more damage he did to my property and the reservoir engineer approved all the work as completed so they had to have another company come in and redo everything that this first company screwed up. They spent at least half a million dollars redoing all the damage that the first contractor instead of coming to Colorado dropping everything coming to see what was going on. They said when manpower is available we'll do your work. I got it in writing if you want to see it.	True	False	False	False	True
Interviewer: But this is what this one wasn't through the complaint process there's no Peter I'm saying hey can we meet and talk about these issues. I had called him and asked if he could come to a ranch that I would like to show my reaction to some problems. So like I said met him in Gardner and I had shown him some pictures and it kind of sounded terrible when I got in My truck oh boy did i do the wrong thing.. So I showed him everything I could get me at the conclusion that I need to talk with	True	True	False	False	False

personally he didn't elaborate what that meant. This is what really started the whole process they were never aware that there was a problem in my ranch. Prior to that I had prior problems with noxious weeds and i would contact them Oxy and they kind of tell me they had they had a sprayer there and that's the way it goes.					
Anyway so they go investigate and they say yeah. Well what happened was some big truck pulled in and he faced the wrong way and he ran this machine and that's just what that's what happened .and you are like OK. Did it for an hour and a half. And.	True	True	False	False	False
The county told them they had to or they would not have. The county told them if we grant these permits you have to do these things so it was a condition of the permit. It wasn't so much of us working with the commissioners It was just that the commissioners felt like this would pacify us enough. Well I think you know because they're you know they are elected officials and just kind of smooth things over make things happy we'll continue bringing the money in for this area. I think the other thing is that was concerning them is they are not fools and they do know accidents do happen.	True	False	False	False	True
You know you know you. You know you want to use all your all your almost do anyway. There are some pretty fun things. What did don simpson call us? Oh I don't remember... it's a lunatic fringe it's a very few people. One of the one of the guys that is a landowner that holds also owns his mineral rights and wants them developed says well there are only four hundred people in Battlement Mesa opposed to oil and gas. Well but I don't think so. I don't think so. Well anyway.	True	False	False	True	False
And we were just we would insist on community meetings we wanted to know what Ursa was doing so they've been good about having regular meetings. And they say they tell us what they're going to do and we tell those them what we would like to have them do and then they do what they say they're going to do except the fact that we got that county zoning and planning commission	True	True	False	True	False
the one thing that Garfield County has. And our community especially through all this process of we've been going through for the past about three years when urso talked about activating their mineral rights and coming to drill within the PUD We've had meetings with the zoning and planning commission. And the commissioners and they have come down and walk down the particular pad sites. And still decided it's OK to drill down here.	True	False	True	True	False
a lot of people are well are well educated they were from different industries and they're geologist people that knew a little bit more than I think Antero thought they knew. And so when they did ask a question. The man in charge of the meeting turned to somebody sitting just table work and he could see them talking and say we'll get back to you on that so that was kind of a phrase I heard more than once.	True	False	False	False	False
well i think my most direct was when i spoke with cogcc board at their meeting you know that was definitely the best interaction that i had. direct is always good. and you know when i was done the head, the head i've got his name somewhere the president of the board or something he was the guy in charge and he came up to me afterwards and said thank you so much we never have people come to our meetings so thank you for sharing that if i can help you and you know i probably called probably 12 people with cogcc with voicing concerns and questions and asking for help and um i have to go through my notes	True	True	False	False	False
you just lost you know your house essentially and you have no recourse you have no way to communicate with anybody about it talk to anybody so that was that was actually a really nice thing for me he was like you got a problem to call i can tweak things and i would be glad to do so and i'm sure he's probably they move him around and os and also towards the end tend and he was like now they have a new rule and i can't talk with you so what he did with me i don't think he could do under their new rules i'm going to guess they probably did get lawsuits and you can imagine how the supervisor says something then that could be a problem for them in a lawsuit situation	True	False	True	False	False
the one saving grace in this scenario was the supervisor in this operation turned out to be a nice guy and this is before they had rules to the effect	True	True	True	False	False

of you can't communicate with the public i'll get you what numbers i have for anadarko it was such a traumatic experience that i very consciously deleted a bunch of pictures i was like okay i'm done so i'm not seeing his number so I went over there and not only that i videotaped but i deleted the video but i can check you know it's taking up space from my computer but i did videotape a couple of visits over there cause i didn't know where i was going with this am i going to end up suing the and at some point i'm like i'm just selling the house os um i went over there and somebody connected me with the supervisor and the site supervisor who turns out to be a nice guy and he's like i'd be glad to give you a tour and he spent a lot of time with me i would guess that first visit he spent over two hours walked me through the whole thing sat down and talked with me you know he was like you've got any problem you call we can make adjustments on the light which way they are pointed we can change i mean the direction he was very nice actually and he was the one saving grace for me because that's the frustration is when you feel you have nobody cares and you have no way to you know here					
there was big fire over there and I called barrett i called 911 first and then I called barrett and said I just called 911 you may want to get some people up here your things on fire there were people running everywhere fire department cops garfield county it was amazing. they usually take my word for which direction it's come from and if i know I tell them and if I'm not sure i just tell them I'm not sure which direction it would come from and I just guestimate wind velocity 2 to 5 miles per hour you got the flags flapping and stuff who was it who brought that thing up here that they set up in the field was that garfield county no was that barrett no i think it was garfield county okay the one that was not up on top of the hill but right here that you had to hook up for them cause they couldn't set it up yeah	True	True	False	False	False
so they sent us these little sealed vacuum containers where they take air samples and stuff and we've taken air samples around here where it stunk so bad you couldn't hardly stand to breathe it when you went outside you had to hold your breathe they even put one of those canisters in our bedroom window and it was at the time where we keep our bedroom window open cause the weather was nice and they set one of those inside our window but we never heard anything about that but that one that was in our bedroom window and the one on the step we never heard anything about that no result whatsoever and the ones up here on top of the hill they said they found propane and something else what was it they said they had in the house they said they found freon in the house i said really we don't have any appliances in freon in them cause at that time we had gas refrigerator and they said yeah you got freon in your house and i said well i didn't know you must be making it here cause we don't have anything with no freon here no conditioners no refrigerators no deep freezers everything was gas gas refrigerators work on ammonia and water i said did you find any ammonia in the house they said no we found freon i said well you guys are pulling my leg then.	True	True	False	False	False
could you tell me about any interactions you've had with the oil and gas industry they haven't been good because i guess barrett was really glad when i sold this place cause i was nothing but a thorn in their side i probably called them like two times a week they were always really nice to start with but when they started getting aggravated they'd say we can't find anything we've done this we've replaced this and just here recently they've bought a new camera that takes pictures of vapors in their 2000 dollar camera takes pictures infrared or something and they send that out and said we can't find anything	True	False	True	False	False
T 815 PM I STOPPED AT WILSON PAD -- TALKED W/"KEVIN" FROM TLT FLOW TESTERS. I COULD SMELL THE 'FAMILIAR' PIT ODOR APPROACHING THE PAD 1/4 MILE FROM THE WEST. KEVIN SAID THAT THE WORKOVER RIG (STILL THERE) HAD RECENTLY BLOWN GAS BACK INTO THE TANKS. WATER WAS GUSHING PERIODICALLY FROM WELL UNDERGOING COMPLETION INTO THE PIT. J K WENT TO ENLWS, J. FANDRICH ALREADY THERE. JEFF SAID THAT HE DETECTED ODORS ALSO. DION SAID ODOR STRONGER A SHORT WHILE BEFORE, BREEZE HAD SHIFTED. SPOKE W/MR/MRS ENLOW	True	False	True	False	False

FOR SEVERAL MINUTES AND JEFF F ALSO. THEY SAID ODOOR WAS WORSE ~ 1/5 WEEKS AGO					
Ryan Costa Contacted Ms. Koscove on 10/24/2014. An on-site meeting is scheduled with Ms. Koscove and Ryan Costa (COGCC Reclamation Specialist) on 10/30/2014. Â Â Â Â 10/14/2014 Â Â Â Â CDMS Â Â Â Tyler O'donnell Ms. Koscove contacted CDRMS. "OXY did not have permit. On site visit scheduled 10/17/2014."	True	False	False	True	False
those things that I would definitely advocate for other neighborhoods to have the same information going into it so that these things don't happen to other people but basically just learning the rules of the game. Interviewer: And how did they convey knowledge to you or was it they didn't I think I read about it. I think i would read about it or they would state it and then I just took it at face value that that's what it was I didn't maybe follow up just make sure it was accurate. Probably too because they were multiple people like oil and gas and the other guy he would, they would tell me the same thing. So it was like a... culminating data that was telling me from this data point from this data point so I mean again I'm like trying to work and, You know have a life.	True	True	False	False	False
I would text them all the time or if i didn't hear back I would call them could be at 4 in the day it could be at 8 in the morning it could be at 1 in the morning cause generally if i was gonna text or call it was something that we couldn't tolerate it was something that was not okay. ad they were always very receptive and would try to accommodate the burning off with the flames they basically said there is not a lot we can do that has to be done. but i just kept pushing back with the air quality piece.	True	False	False	True	False
eah they brought in an easel and everything there was a little bit of um, don't know if it was like good old boys ut between the oil and gas commission and who where those people at that meeting it was like extraction was there i know that but from the oil and gas commission there were like three guys from the oil and gas commission they were not as responsive... talking to kid... um they let's ee they the the the three i want to say there were three maybe four, the people from the oil and gas commission who besides the guy who was our contact they were somewhat not as receptive they were kind of like this is the way that it this is the way we roll we are out here were kind of going some face time but you know what we can do these things cause our legislation ways v can the other people who were with extraction understood that but they were very much they did not want to tick us off they were very um accommodating and wanted to know you know what would help us to ease the process so then they that's when that wall went up	True	False	True	True	True
um the company that was the first company there they left and then it became this new company which is extraction and the people the guys that were working for extraction were actually very thoughtful and we did have a meeting here with the oil and gas commission there were probably like 7 or 8 people like three people from the state came and four from their direct comay and so and then all the neighbors and all the neighbors that wanted to come and they came over and we had a pow wow cause i believe that it doesn't do any good to put your arms up and cause a big fight rather try to understand what's going on .	True	True	False	True	False
and he was like no, they can't do that and so basically the rig guy was like oh we'll turn down the lights we'll make it quite blah blah blah and we're like yeah right you just want to get shut down again	True	False	False	False	True
nd we get a phone call from the head of the rig the next day saying hey let me come over and talk to you guys and make sure we are on the right page and we're sorry we were too loud and yada yada yada and basically said don't ever call that guy again just call me directly and if we are too loud well shut it down	True	False	True	False	False
Interviewer: OK. So you mentioned Matt Lepore there the next thing I wanted to ask you about was in the interactions you had with the state oil and gas agency. Response: So nothing direct you know I I think I left a voicemail for them and and I went online and you know filled out the complaint and that was all the day of the flaring which resulted in the terrible odor in the air and that was my complaint was the odor. I saw him speak at one of the town council meetings and I think, I mean it was after they had already shut down the PRatt site. And my take a really	True	True	False	False	False

interesting thing frustrating was that he even admitted that the state was slow to respond but he also said that any time new drilling starts they get a lot of complaints and so they usually kind of wait and see how things settle down before they really do much about them. But then the problem with the Pratt site was that so many complaints kept coming in and that then they finally realized oh it's really a problem. So to me it's really frustrating that just because they always get complaints they just kind of ignore them first. That's great. It's right up there with they don't actually have enough people you know within state government to actually monitor these sites Anyway. And so it's very ineffective oversight. Which I'm sure is a product of specific design. I think you know I think oil and gas owns us they own everything.					
I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor. You know what I'm saying and because I know they had a business, and, you know So I was trying to meet him in the middle. But they they, they weren't meeting me in the middle of this and this was I mean even the the light thing	True	False	False	True	False
Every couple weeks at least once a month and they'd come out and we'd have meetings of what they could do with the facility to downsize it to make it better to make visuals better. You know they did you know did try to work with me there but there are they had a lot of influence between my lawyer and C O G C C too they were pushed up against the wall so to say you know they needed to start complying and which they did I have to admit you know but it was a battle, It was a fight and then you know they brought out the other. You know like the had putting in the machinery. You know those, those guys you know they would bring in a couple of them and would discuss what they could do and you know like what it would cost to put in trees. You know for the, To hide. You know. Yeah. And just stuff like that but you know but they offered to put me to put in the trees and my brothers going Well when his dad dealt with the gas companies you know they would go ahead and do all that you know they'd get the trees bring them in and plant but Encana says we don't do that. And you know it's like OK fine whatever. I don't. Hell mean I didn't know how all the gas wells worked and stuff and you know my Dad had, we didn't really have any anything you know in our farms as far as that went. So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.	True	True	True	True	True
Well I kind of started out with their land managers you know two young guy. And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know. And I told him they were my trees of had grown so instead of the road being straight down along the trees course their spreading out like this which was taking more of my land you know and I showed ryan his name was ryan too. And I showed Ryan that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean. And there was excuses like that through the whole process. Well what is this vibration ryan well I don't know. And I just know when he drove out on the road he wouldn't think twice about it. And. And then they said OK well we'll put up sound walls so they put in the sound walls we're going to pay an extra thousand dollars for the road easement you know to put in the sound walls never saw that and um they put in the sound walls but the thing was was that was like a box that was opened on top and the noise was still coming on it didn't reduce the noise at all. zero. You know so complained again and they come out and and I just finally, I don't know exactly how it worked	True	True	False	True	True
As a resident that had one, I think they learned more than we did. I think	True	True	False	False	False

I think for them it was an eye opener Because I don't really think that you know when they decide to put Wells in certain places and stuff that you know they're really thinking about what it's going to do to the populous around them. They're looking at it is they've got to get a job done You know they're making their money, You know it's a good thing for this country You know to be self-sufficient in oil not have to buy it overseas stuff like that. So I think it was a I think for them It was a pivotal point that I don't think they thought about it in that prior because they're not building a behind their own house. I don't think they thought stuff like that. (TALKING TO CAT) I didn't really learn a lot. Dealing with the company for me was you know I expected to be snubbed to be told that you know they're not going to do anything that it's within their you know I was I was expecting that. I don't know about the other two People but was I was expecting to be treated that way so it didn't come as a big surprise or anything. I mean you're talking about a multimillion dollar business and you've got you know a couple of old ladies calling and you know I mean think about that for a second. You know they're not going to get right on that and. You know fix it. It's just not something they're going to do. Their main priority is getting that gas or oil or whatever out of the ground.					
that resulted in a stand up between the board of county commissioners and antero, the board of county commissioners were compelled by public demand to stop antero. now antero had the right from the cogcc and second they said we're going to challenge it legally and to be forever the board of county commissioners they stood up to the plate and they did what the citizens wanted them to do and antero ended up in negotiations, that was	True	False	False	False	True
and ultimately they settled and up here they cannot drill every drill every 109 acres they can't do it they are limited to their one every fifteen acres they can't drill one every 40 acres they cannot drill one every 5 acres legally	True	False	False	False	True
um yes, so uh the meetings that the operators hold are you know the most um, so you get to know the players are and you get to talk to them to a certain extent one on one at the end of the meeting and when you ask questions you and when we went through this whole battle over the 10 well density 10 acre well density as one of the spokesperson for our local group um i dealt a lot with um	True	False	False	False	False
you get to talk to them to a certain extent one on one at the end of the meeting and when you ask questions	True	False	False	False	False
you get to smoosh so it's really important because if you are not there you don't get to hear all this stuff so it's it becomes embedded with all these people.	True	False	False	True	False
es yes it does if you liek if u like somebody on the other side on a personal level it can make it you it can you have to be very compartmentalized and be like this is business it's not personal its eyah for example like kevin kills for example him and i got along very well like in denver we have a very similar sense of humor but he's an oil and gas guy and so then i'd have to stand up in a meeting and say you are f of sh*(but it was difficult but it had to be done you have to remember they are a person it is kind of it is it must be very unnerving for ordinary citizens who liek are just dropping in tis like how can you people be friendly when you are on opposite sides like this this is our lives we live this you shouldn't be you shouldn't be friends because it's just not it's not they are bad people... how can you be friends with people who are morally bankrupt but they are just people too trying to make a living a disgusting one	True	False	False	True	False
Yes I think it has to make some difference. Before antero sold to ursaw had to come up with a Community Development Plan with ursaw with Antera working with Antera how development would take place in this area which involved things like simple things like you know haul routes which roads were going to be used times of hauling.. Stuff like that how things are going to be landscape how things we're going to have you know it didn't make a specific difference in this area so we did have that and I suppose that is about negotiation in good faith isn't it and um, yeah it did make a difference yes. But it's hard to know is believe that they agreed the plan, they agreed to this community development plan, got	True	False	False	False	True

away with as much as they could and then I think when they would started they would have ignored it because it was not a legally binding document so why would they they would have just carried on and done whatever they wanted to do anyway.					
YEah but it went through for it when I mean it was informal but it went through a fairly formal process as much as there were lots of meetings about it this that and the other and we probably had meetings and meetings and meetings and we came up with this this community development plan but it was it could not be formally adopted because you have to have a legal entity to contract with so CDP's go through the COGCC so they are legally embraced in that way. This was not all this not a that kind of formal document.	True	False	False	True	True
That kept guy down. Simson I actually spoke to him he heard me so. He actually came up to me up to after us is that sleazy He said he said you know being very friendly very is you know we're talking about taking care of some of us the star. You know how did you know I tell you how how would you know the local good feel about that and I said you know we don't have a problem with any individual apart from John. Please don't take up John block. BLOCK. and he said well you're not the first person that said that. So really so that there was you know he did he did and he did that he didn't have to say there was no reason to talk to me about stop to stop it whatsoever. But he did he went out of his way now that could just be a very clever bashing strategy and he would wait platter somewhere else or else. So he did and I was but he did it well to me. So that's probably why I feel better about those two than I do about Tara. But they do they they have got out there waiting to really engage the citizenry and if you read papers blog	True	True	False	False	False
Well you know they've done what they can and they're now down to six like you know we're down forty six going to take these measurements of X. Y. and Z. and we can drill different but there is but it does. Not change the fact that they can put all of their pads outside because they could drill three miles it but it's expensive to do so it's a way to do that so once they've they've cut down the number of paths to the best of their ability. It's still what they've done it still has a compromise that bottom line they are not going to move that have outside and drilling.	True	False	False	False	True
they have been holding meetings back in May So they held them to this I'm losing track of time here because then they have been down stressed out here last year they I think they've they were holding meetings I'd say probably once a month to us as citizens concerns and explain what's happening and how it's done whether it's good	True	False	False	True	False
I want to look at C.P.S. there are. In fact life forms are great idea but if you actually got your way with the plan. The worst exercises. OK let's plan for a thousand wells. He said in a piece that would say I wouldn't put a pretty good actually. I know you know that you can you got to do you know best. Not because then you can be healthy. I'll be healthy. You know this is why I wonder you know I'm curious now how many attempts by citizen groups there have been to establish city peace and whether the resistance has traditionally come from companies or whether citizen groups you know companies have said oh it's developing so it was not said that I asked about the rounds of the G. cried about this is OK This is on this and she has she has been pressing for and she can tell you. OK Matt just no evidence of the whole process proposed for the C.P.S. because theoretically they support they should have it. The idea was that everybody what we think community involvement addressed land and companies the idea was that you would do some certainty because you were centrally you know what plans you have to use or you said you know this. They didn't want to because they didn't know what they were going to do here	True	False	False	False	False

INTRACODER RELIABILITY

Intracoder reliability was calculated based on a sample of 25 excerpts which were blindly coded and compared to initial codings, with statistics calculated in ReCal2¹. The 25 excerpts were selected from three interviews to provide potential for identifying each kind of concept within coded network connections. Given there were 291 network connections coded, this represents just fewer than 8.6% of network connection excerpts. However, of the 291 network connections, principled engagement was only coded for network connections to firms (n=137) and governments (n=143). The test was conducted in the software Dedoose using the training resources developed by the Dedoose software team.²

	Percent Agreement	Cohen's Kappa	Krippendorff's Alpha (nominal)	Agreements	Disagreements	Cases
Principled Engagement	68%	0.412	0.364	17	8	25
Deliberation	76%	0.444	0.417	19	6	25
Determinations	88%	0.603	0.602	22	3	25
Discovery	88%	0.595	0.602	22	3	25
Definition	96%	0.648	0.652	24	1	25
Pooled Kappa:	0.50³					

Excerpts Coded for Test With Results:

Excerpt: 1 4, Location: 20359 - 20843

I received basically from the fax. Then they would they would issue back to me acknowledgment of the

¹ Freelon, Deen G. 2010. "ReCal: Intercoder Reliability Calculation as a Web Service." *International Journal of Internet Science* 5 (1): 20–33.

² Lieber, Eli, and Thomas S. Weisner. 2013. "Dedoose." *Web-Based Qualitative and Mixed-Methods Computer Software*.

³ De Vries, Han, Marc N. Elliott, David E. Kanouse, and Stephanie S. Teleki. 2008. "Using Pooled Kappa to Summarize Interrater Agreement across Many Items." *Field Methods* 20 (3). SAGE Publications: 272–82.

receipt usually via email. Then they would report back to me you know a lot of times if the had someone investigate.course i was alleging usually late night early morning noise violations for the most part so it's hard for them to investigate those they would to put a guy out to check i'd hear back and they'd say they didn't find anything so that's that where can we go from there.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 2 4, Location: 23062 - 23510

Yeah him talking about the talking with the people basically it sounded like he was talking with the operators and that was good enough and getting frustrated because i kept lodging the same sort of complaints that there was a noise that he couldn't find. Well Kind of hard if there is noise for an hour in the early morning late night and sometimes there is not during that same hour to come out and hit the noise. They start getting frustrated.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 3 4, Location: 24458 - 25569

This is the primary guy assigned to our area i guess. He is the main guy i interacted with i interacted with his boss after a while because i started making allegations i was building a file and that i need to have some sort of an outcome eventually. and i also interacted with one or two others like Junior inspectors who that guy only brought along for training or might have gotten dispatched to fill in for him if he was on a break or something.Interviewer: Did you ever feel like working with his director or working with the junior people that made any difference or?I felt more listened to by one of the junior people um. but it didn't make any difference in outcome. And with the director, um I felt like the director... tried to investigate what it whether there was a problem going on that he wasn't aware of. In case he kind of investigated whether the inspector had not been catching something or not But he kind of just ended up thinking I was making stuff up too. but he didn't In my eyes didn't seem to come on to it. No resolution. I was never told that there was an action taken. So.

Code Applications

Trainer Codes	Trainee Codes
	Principled Engagement

Excerpt: 4 4, Location: 30801 - 31800

Some people said they didn't ever hear anything so it was no problem with them including one lady told me that she slept with earplugs all the time so it wasn't an issue for here. clothes. so it's like why do you have to sleep with earplugs so a wide range of stuff interestingly though I'm glad we got down this one of my phone conversations with the local inspector I said I feared the neighborhood and so there might be more complaints and then you'll see that this is real and he said yeah I heard you did I said Well how did you hear i did? Oh I was talking to one of the operators so somebody in my neighborhood probably worked for one of the operators to and took it to the site but the fact that this guy has that kind of relationship with the operator that he's getting stuff about me i put my own contact info on their and stuff too. Yeah I know what you know been up to i seen that they told me at the site. So that where i started to think his pride was in his relationship there.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 5 4, Location: 40808 - 41582

in firestone have you talked to anyone, obviously you talked to the state but did you talk with anyone as far as other levels of government at all?No I talked with a couple people on the state legislature but just in passing basically friends and stuff...but nothing in firestone, some municipalities have a person oh you should talk to a person oh no no i don't know about anything like that. i did call the police a few times with the noise issues and they advised me they couldn't do anything, the sites were right outside city limits right outside city limits and the

violation of the noise ordinance they weren't willing to enforce right outside the boundary. and it seemed to be that the police was where it was, that seems to be where i got? if I found anything

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 6 3, Location: 7155 - 7905

But I'm thinking you know they never discussed anything with me zero what they were going to do what they were planning. nothing. And um in the you know they they just they did they just kind of acted like Move over old lady. We've got stuff to do here were important and you're not and so I just kind of waited and waited and watched all the construction and all the equipment come in and everything and and the drilling and I'm thinking they're not sticking to their contract because they're putting in new wells which doesn't apply to the contract of the road access. You know the roadies easement. and I just felt like if I said something at the time they would swindle out of it and change things you know and make it you know in their favor.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 7 3, Location: 11504 - 12292

And I fought that and fought that and cog, C O G C C fought it with me and I don't know how Jim did it but you know he had some meetings with them and finally got him to get rid of the separators. And then they brought other people out to measure the low frequency vibration and you know," oh yeah it is too high" and they finally got their equipment turned down and you know it was just a battle for a year and a half with them. And yet they'd sit here in meetings and oh we respect you and we want you to be happy and blah blah blah and I just didn't believe a word they said. I just I had a terrible relationship with them. Any time a gas truck goes by I growl. I mean I growl. I pass them on the on the highway and I feel like a dog with his head out the window barking at em.

Code Applications

Trainer Codes	Trainee Codes
Deliberation	Determinations
Principled Engagement	Deliberation
	Principled Engagement

Excerpt: 8 3, Location: 14643 - 14911

I've got to downsize it there was nine tanks out there and they downsized it to five tanks. And I don't even think they need one tank now there's hardly a trucker that comes in once a week. Interviewer: And you said you got them to downsize. Yeah yeah me cogcc.

Code Applications

Trainer Codes	Trainee Codes
Determinations	Determinations
Principled Engagement	Principled Engagement

Excerpt: 9 3, Location: 19689 - 19754

I didn't say a word to him. I did too Encana but they took them.

Code Applications

Trainer Codes	Trainee Codes
	Determinations
	Discovery
	Principled Engagement

Excerpt: 10 3, Location: 23005 - 24369

Well I kind of started out with their land managers you know two young guy. And you know I called them and you know asked them what was going on and I says you need to come out here you need to listen to this noise and you know so finally got him out here in June and you know. And I told him they were my trees of had grown so instead of the road being straight down along the trees course their spreading out like this which was taking more of my land you know and I showed ryan his name was ryan too. And I showed Ryan that. Well his excuse was well there's snow on the ground, I can't tell. You could see how it was bowed for God's sakes. You know what I mean. And there was excuses like that through the whole process. Well what is this vibration ryan well I don't know. And I just know when he drove out on the road he wouldn't think twice about it. And. And then they said OK well we'll put up sound walls so they put in the sound walls we're going to pay an extra thousand dollars for the road easement you know to put in the sound walls never saw that and um they put in the sound walls but the thing was was that it was like a box that was opened on top and the noise was still coming out it didn't reduce the noise at all. zero. You know so complained again and they come out and and I just finally, I don't know exactly how it worked,

Code Applications

Trainer Codes	Trainee Codes
Determinations	Determinations
Discovery	Discovery
Deliberation	Deliberation
Principled Engagement	Principled Engagement

Excerpt: 13, Location: 26057 - 26789

Basically I did all the communications My lawyer coached me. OK so to say now I found out later that Encana's policy is that once they are contacted by somebody's lawyer it's the lawyers all the way. You know there isn't any other interaction. Well I can afford that. Here you know what I'm saying and and I really didn't realize it to be honest with you. You know and with the coaching of my lawyer you know to write the letters and I wrote letters to just about everyone at Encana including Channel 9 News COGCC. And I just sent it out to everybody. Shit that's what a public relations Windy Wheaton-burger when the Wendy Widenmeyer that's when she contacted me and from Encana and then we started getting things rolling.

Code Applications

Trainer Codes	Trainee Codes
	Deliberation
	Principled Engagement

Excerpt: 12 3, Location: 27796 - 29704

Interviewer: But Wendy is she your primary person you talk to at encana (yea) you know and how often do you engage with her after that was a one time occurrence was it Every couple weeks at least once a month and they'd come out and we'd have meetings of what they could do with the facility to downsize it to make it better to make visuals better. You know they did you know did try to work with me there but there are they had a lot of influence between my lawyer and C O G C C too they were pushed up against the wall so to say you know they needed to start complying and which they did I have to admit you know but it was a battle, It was a fight and then you know they brought out the other. You know like the had putting in the machinery. You know those, those guys you know they would bring in a couple of them and would discuss what they could do and you know like what it would cost to put in trees. You know for the, To hide. You know. Yeah. And just stuff like that but you know but they offered to pay me to put in the trees and my brothers going Well when his dad dealt with the gas companies you know they would go ahead and do all that you know they'd get the trees bring them in and plant but Encana says no we don't do that. And you know it's like OK fine whatever. I don't. Hell I mean I didn't know how all the gas wells worked and stuff and you know my Dad had, we didn't really have any anything you know in our farms as far as that went. So I when I grew up I just heard the horror tales from working at the pepper pot all the farmers would come in and talk about it so I'd hear that kind of stuff you hear pros and con you know some guys were for it and other ones just hated it with a passion. But I always kind of thought that the ones that liked em was the ones that owned three hundred to one thousand acres and they were making royalties and you know we're happy.

Code Applications

Trainer Codes	Trainee Codes
Determinations	Determinations
Definition	Deliberation
Discovery	Principled Engagement
Deliberation	
Principled Engagement	

Excerpt: 13 3, Location: 37785 - 38365

I mean I could live with that you know I mean I was trying to be a good neighbor with them too when they started using this road over here the second time without a contract. Well they asked me Can we you know go ahead and start using this road and it was like yeah well they never brought the contract but I was trying to be a good neighbor. You know what I'm saying and because I know they had a business, and, you know. So I was trying to meet him in the middle. But they they, they weren't meeting me in the middle of this and this was I mean even the the lights thing

Code Applications

Trainer Codes	Trainee Codes
Deliberation	Deliberation
Principled Engagement	Principled Engagement

Excerpt: 14 3, Location: 44269 - 44473

um, well I was I was working that day and barb called me and she said Jim came out today. Don't you start (Talking to ca). And Jim came out and he said he, He said, there won't be any more noise.....

Code Applications

Trainer Codes	Trainee Codes
	Determinations
	Principled Engagement

Excerpt: 15 3, Location: 51453 - 52269

interviewer: but it wasn't usually instantaneous you know correct. Yeah. Yeah. Interviewer: Do you could you give me a rough numbers estimate as far as you know how many times it was that you called C O G C C or whether it was six seven times I'd have to say. Interviewer: Did they respond back to you each one of those times it just took some time or were there times where you had to call multiple times or they pretty much responded every time. (OK) yeah. you know I always figure probably with meetings between the company and them and stuff you know it'd take time to work things out. But in the meantime they just kept those facilities running no matter what if it shook my house or not, you know, until you know somebody really tromped down on him. They weren't going to shut it down. Period.

Code Applications

Trainer Codes	Trainee Codes
	Deliberation
	Principled Engagement

Excerpt: 16 3, Location: 53578 - 53864

American resources. I believe was the name of the company. I have to look at the papers but then they changed over to Encana and they sold out and Encana bought em. So there was a difference of owners there too. Whereas American resources was much more compliant easier to work with

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 17 3, Location: 68088 - 69245

You know this one kid came in here parks right in the middle of my backyard here from Encana to do a sound test. The facility was shut down. So how is he going to do a sound test when its not even running and so I go out there and it's like Who are you. And he goes Well some old lady across the street complained about the noise so I'm here (he said he that!) and so I just kind of let it go. You know what I mean. And that was the day I called my lawyer and I said shut it down. I've had enough of this and um So anyway so I came in called my lawyer told him what happened. You know and I said call their lawyer shut this thing down. This is it we're done. And so then I went out there and I asked for him for his business card. You know he gave it to me and I said you know this is private property. You're parking on. "Well I'd thought it was Encana's overflow" and I said and you know that old lady who was complaining about the noise that was me. Then he just got all shook up the you know it's like get the hell off my land. But I mean this is the attitude encana kept throwing at me the whole time. I mean how am I supposed to respond

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 18 From Media: Gar Interview, Location: 978 - 1798

I got a letter from Barrett got some papers for you to sign oh what's worse oh we want to drill a well up here on your property well i said where you want to put it right out there I'll show you after awhile and he wanted to put it right in the middle of the property and i got a five acre paintball field and a shooting range out there and they wanted to put the damn thing right in the middle of the property cut it in half with a road i said well we're not going to do that. I waid when do you need these papers back and he said well today would be great well we got a lawyer out of steamboat springs and spent about a year and a half arguing with those sons of bitches and finally kept them off of this place and they got tired of dealing with us and went next door to the west and drilled on the next guys little.

Code Applications

Trainer Codes	Trainee Codes
	Deliberation
	Principled Engagement

Excerpt: 19 From Media: Gar Interview, Location: 9087 - 9216

i learned a lot from that grand valley citizens alliance in parachute. within 800 yards of our place we have 60 operating wells.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 20 From Media: Gar Interview, Location: 13911 - 14525

could you tell me about any interactions you've had with the oil and gas industry they haven't been good because i guess barrett was really glad when i sold this place cause i was nothing but a thorn in their side i probably called them like two times a week they were always really nice to start with but when they started getting aggravated they'd say we can't find anything we've done this we've replaced this and just here recently they've bought a new camera that takes pictures of vapors in their 20000 dollar camera takes pictures infrared or something and they send that out and said we can't find anything

Code Applications

Trainer Codes	Trainee Codes
Definition	Definition
Principled Engagement	Deliberation
	Principled Engagement

Excerpt: 21 From Media: Gar Interview, Location: 14526 - 15785

so they sent us these little sealed vacuum containers where they take air samples and stuff and we've taken air samples around here where it stunk so bad you couldn't hardly stand to breathe it when you went outside you had to hold your breathe they even put one of those canisters in our bedroom window and it was at the time where we keep our bedroom window open cause the weather was nice and they set one of those inside our window but we never heard anything about that but that one that was in our bedroom window and the one on the step we never heard anything about that no result whatsoever and the ones up here on top of the hill they said they found propane and something else what was it they said they had in the house they said they found freon in the house i said really we don't have any appliances in freon in them cause tt that time we had a gas refrigerator and they said yeah you got freon in your house and i said well i didn't know you must be making it here cause we don't have anything with no freon here no conditioners no refrigerators no deep freezes everything was gas gas refrigerators work on ammonia and water i said did you find any ammonia in the house they said no we found freon i said well you guys are pulling my leg then.

Code Applications

Trainer Codes	Trainee Codes
Discovery	Discovery
Principled Engagement	Deliberation
	Principled Engagement

Excerpt: 22 From Media: Gar Interview, Location: 18426 - 18919

og you can't see through it it wasn't quite opaque but it was really hard to see through i said well it's covering the whole ravine and, oh well it's probably just something it's nothing that's going to hurt you there's nothing to worry about and i said what happens if i go out and throw a match in that shit and they said well don't do that and i said why not they said that shit will burn and they said oh well get someone out there and i said you better or i'll see if that stuff will burn

Code Applications

Trainer Codes	Trainee Codes
	Discovery
	Principled Engagement

Excerpt: 23 From Media: Gar Interview, Location: 22533 - 23356

there was big fire over there and I called barrett i called 911 first and then I called barrett and said I just called 911 you may want to get some people up here your things on fire there were people running everywhere fire department cops garfield county it was amazing. they usually take my word for which direction it's come from and if i know I tell them and if I'm not sure i just tell them I'm not sure which direction it would come from and I just guesstimate wind velocity 2 to 5 miles per hour you got the flags flapping and stuff who was it who brought that thing up here that they set up in the field was that garfield county no was that barrett no i think it was garfield county okay the one that was not up on top of the hill but right here that you had to hook up for them cause they couldn't set it up yeah

Code Applications

Trainer Codes	Trainee Codes
Discovery	Discovery
Principled Engagement	Principled Engagement

Excerpt: 24 From Media: Gar Interview, Location: 29442 - 29836

did any of your interactions with dave graham ever help to change anything or?no. i guess he was responsible for them writing a few violations for stuff they'd catch something up here i know kirby wynn nailed them for a couple of things but they never really whatever they did did not change the problems we were having with smelling that thing even comes with instructions on how to use it.

Code Applications

Trainer Codes	Trainee Codes

Excerpt: 25 From Media: Gar Interview, Location: 43466 - 44113

yeah we went to one of the meetings they had at the fire station sometime that was back when barrett had it they had some sort of meeting down there sometimes and everything was going fine until i showed up down there and then they started they rattled off something and i'd look through my notes and shit and nail them with something well what about this or what about that that they didn't care for that shit at all i pissed a bunch of people off i had people saying who's that sitting over there who's he and everybody eventually found out who i was and anyone who worked for barret or garfield county or colorado or oil and gas knew who i was

Code Applications

Trainer Codes	Trainee Codes
	Deliberation
	Principled Engagement